80-329

HYDROGEOLOGIC DATA

FOR

SELECTED COAL AREAS

EAST-CENTRAL MONTANA

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Water-Resources Investigations
Open-File Report 80-329

Prepared in cooperation with the
U.S. Environmental Protection Agency

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

HYDROGEOLOGIC DATA FOR SELECTED COAL AREAS, EAST-CENTRAL MONTANA

By Robert S. Roberts

U.S. GEOLOGICAL SURVEY

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Helena, Montana
April 1980

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

For additional information write to:

U.S. Geological Survey
428 Federal Building
301 South Park
Drawer 10076
Helena, Montana 59601

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METRIC CONVERSION TABLE

The following factors can be used to convert inch-pound units in this report to the International System (SI) of metric units.

Multiply inch-pound unit	By	To obtain SI unit
acre	4047	square meter (m^2)
inch (in.)	25.40	millimeter (mm)
foot (ft)	0.3048	meter (m)
gallon per minute (gal/min)	0.06309	liter per second (L/s)
mile (mi)	1.609	kilometer (km)

temperature, degrees Celsius (^oC) = 0.556 (^oF-32)

HYDROGEOLOGIC DATA FOR SELECTED COAL AREAS, EAST-CENTRAL MONTANA

By

Robert S. Roberts

ABSTRACT

Hydrogeologic data were collected in selected coal areas of east-central Montana to provide a basis for evaluating the effects of future coal development on the ground-water resources. Inventory records for 916 domestic, stock, public supply, commercial, and test wells are tabulated in the report; the data were collected principally from 1975 through 1976. The locations of the wells are shown on a map at a scale of 1:250,000. Lithologic logs are also included for 149 wells. Chemical analyses of water samples from selected wells consist of 167 samples analyzed for major cations and anions and 24 samples analyzed for miscellaneous constituents.

INTRODUCTION

Numerous lignite coal deposits occur in the east-central Montana part of the Northern Great Plains. Because the coal occurs at shallow depths, it can be extracted by surface-mining operations. Such operations may significantly affect the water resources of the area, both areally and with time. As a result, data describing the water resources prior to any large-scale mining are needed to provide a basis for making land-use and water-use decisions and development-impact predictions.

In July 1975, the U.S. Geological Survey, in cooperation with the U.S. Environmental Protection Agency, initiated a program of ground-water data

collection in selected coal areas of east-central Montana (fig. 1). The purpose of this report is to present the data collected to aid in evaluating the effects of future development on the ground-water resources.

Inventory data were obtained for 916 domestic, stock, public supply, commercial, and test wells in parts of Dawson, Garfield, McCone, Richland, and Wibaux Counties. The data were collected principally from 1975 through 1976; however, a few water levels and discharges were reported for earlier dates, some as early as 1936 and 1940, respectively. Records of inventoried wells are listed in table 1 and well locations are shown on plate 1.

Logs describing the lithology of stratigraphic units penetrated in drilling a well were obtained mostly from landowners, well drillers, and State and county records. Some logs also were obtained from test holes drilled and cased to assist in monitoring water levels, providing water samples for chemical analysis, and determining aquifer characteristics. The logs for 149 wells are in table 2. The lithologic descriptions are as reported by well drillers or geologists, except for minor word changes made for consistent presentation.

From the wells inventoried, 167 water samples were collected and analyzed for major cations and anions. The results of these analyses are in table 3. Water samples from 24 selected wells were also analyzed for miscellaneous-constituent concentrations (table 4). Data in the tables are reported as dissolved. The dissolved concentration is determined for a water sample after it is passed through a filter having a pore-diameter size of 0.45 micrometer (micron). The chemical analyses were performed by the laboratory of the Montana Bureau of Mines and Geology in Butte, Mont., and the USGS National Water Quality Laboratory in Denver, Colo.

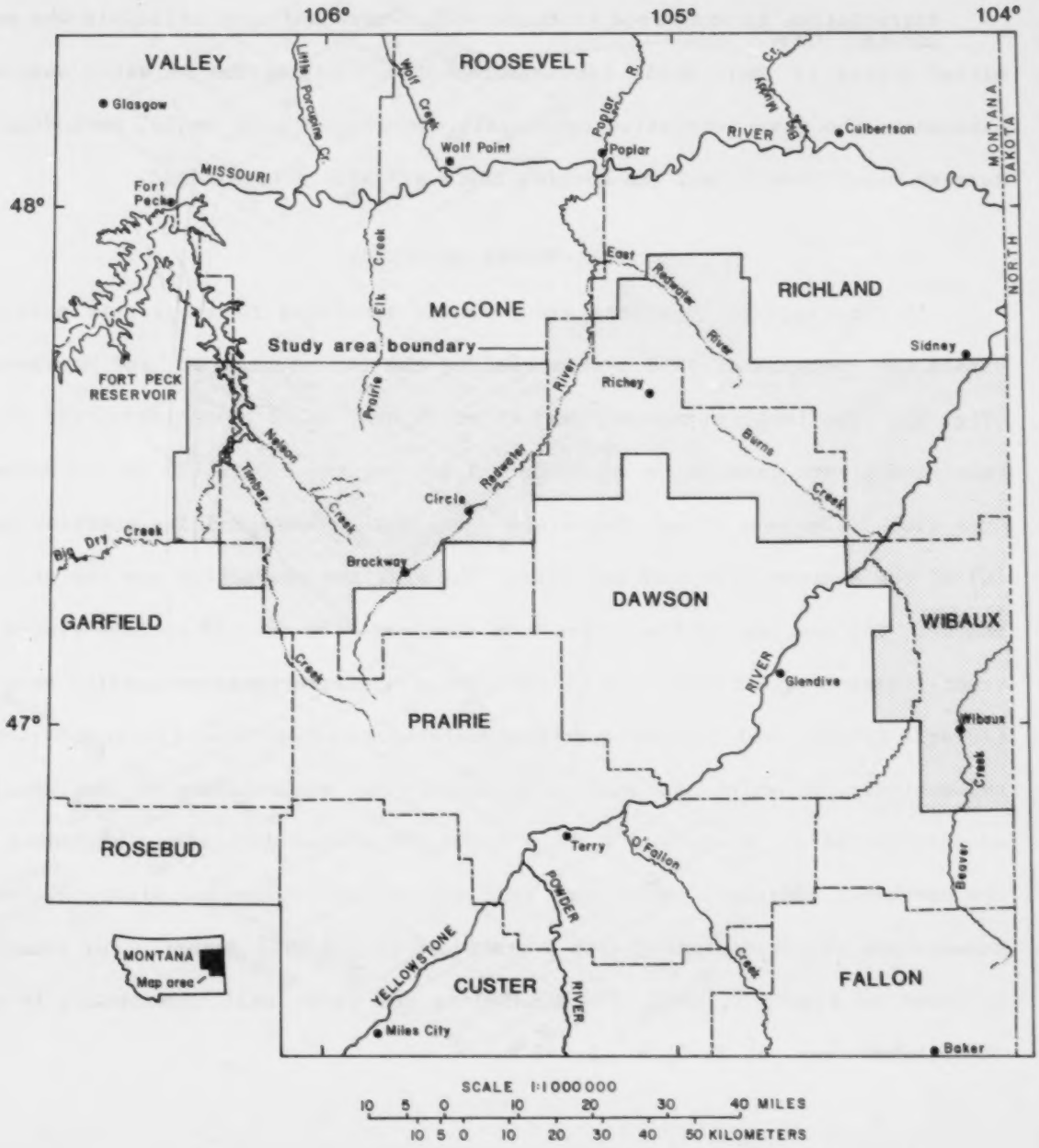

Figure 1.--Location of study area.

Appreciation is expressed to those well owners and city officials who permitted access to their wells for measurement and collection of water samples. Landowners who gave permission to install observation test wells, periodically measure water levels, and run aquifer tests are also acknowledged.

WELL-NUMBERING SYSTEM

In this report, locations are numbered according to geographic position within the rectangular grid system used by the U.S. Bureau of Land Management (fig. 2). The location number consists of as many as 13 characters. The first three characters specify the township and its position north (N) of the Montana Base Line. The next three characters specify the range and its position east (E) of the Montana Principal Meridian. The next two characters are the section number. The next one to four characters designate the quarter section (160-acre tract), quarter-quarter section (40-acre tract), quarter-quarter-quarter section (10-acre tract), and quarter-quarter-quarter-quarter section (2½-acre tract), respectively, in which the well is located. The subdivisions of the section are designated A, B, C, and D in a counterclockwise direction, beginning in the northeast quadrant. When more than one well is described within a tract, consecutive digits beginning with 2 are added to the well number. For example, as shown on figure 2, well 17N45E06ABBD is the first well inventoried in the SE¼NW¼NW¼NE¼ sec. 6, T. 17 N., R. 45 E.

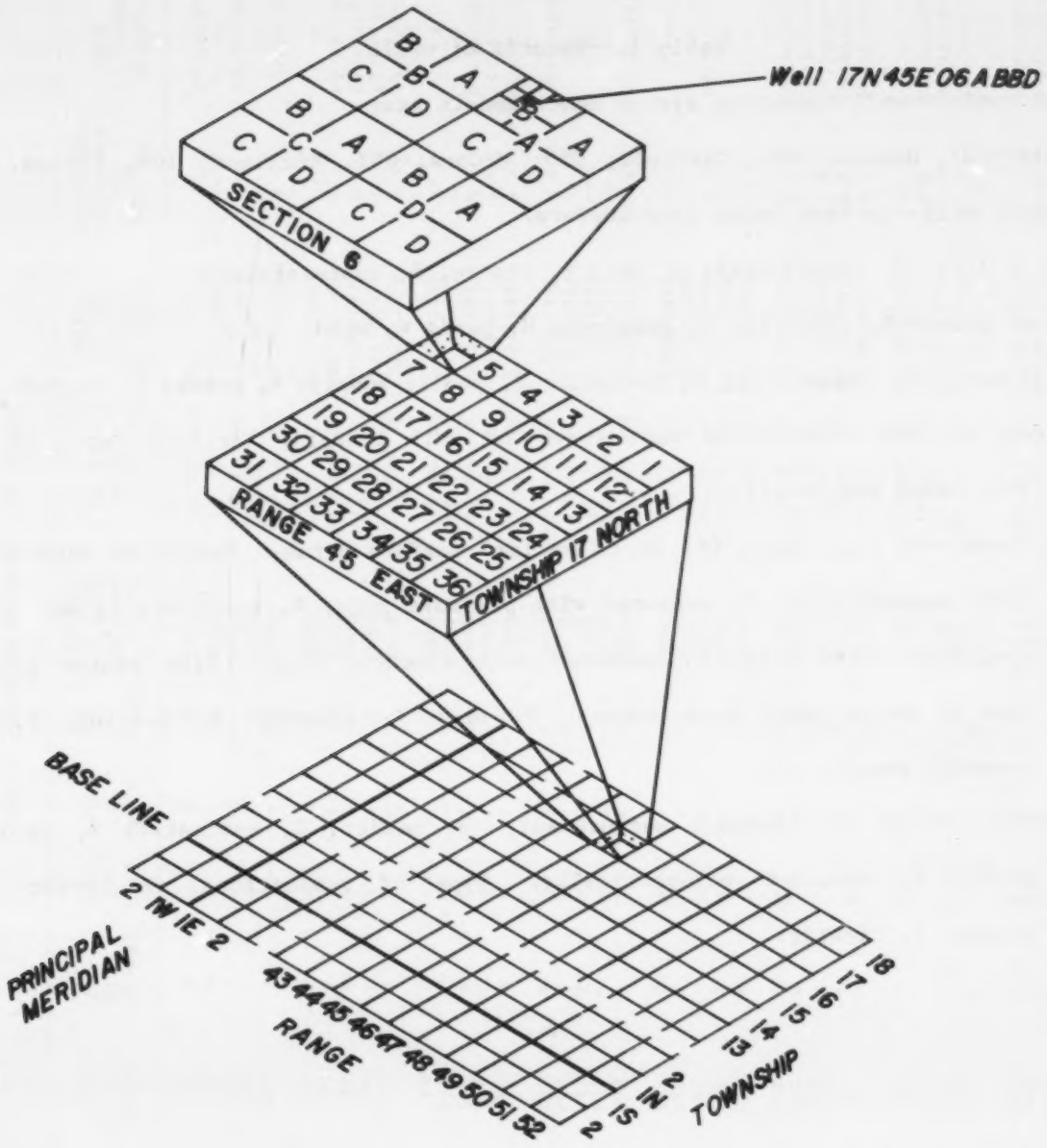

Figure 2.--Well-numbering system.

DATA

Table 1.--Records of wells

Local number--well-numbering system described in text.

County--021, Dawson; 033, Garfield; 055, McCone; 083, Richland; 109, Wibaux.

Depth of well--in feet below land surface.

Type of lift--C, centrifugal; J, jet; P, piston; S, submersible.

Type of power--E, electric; G, gasoline; H, hand; W, wind.

Use of water--C, commercial; H, domestic; P, public supply; S, stock; U, unused.

Altitude of land surface--in feet above National Geodetic Vertical Datum of 1929 (mean sea level).

Water level--in feet above (+) or below land surface datum. Method of water-level measurement: G, measured with pressure gage; R, reported; S, measured with steel tape; V, measured with electric tape. Site status at time of water-level measurement: D, dry; F, flowing; P, pumping; R, recently pumped.

Discharge--Method of discharge measurement: B, bailer; E, estimated; R, reported; V, measured volumetrically. Type of production: no letter, pumped; F, flowing.

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
13N59E01BAAA	109	95	4	S	E	H,S	2750	64.00	SR	09/28/1976	4 V	09/28/1976
13N59E06DDAB	109	130	4	P	E	S	2950	57.00	SR	09/30/1976	--	--
13N59E23CDDD	109	245	4	S	E	H,S	2900	78.80	SR	09/29/1976	2 V	09/29/1976
13N59E24BDD	109	252	4	S	E	H	2795	80.00	R	06/28/1973	--	--
13N59E29AAAB	109	400	4	--	--	H,S	2950	113.70	SR	09/29/1976	5 V	09/29/1976
13N59E32BADA	109	68	4	P	G	S	3000	48.00	SR	09/29/1976	--	--
13N60E06CBBB	109	80	4	J	E	H	2700	12.60	SR	09/29/1976	9 V	09/29/1976
13N60E07CB	109	80	4	P	G	S	2800	15.30	SR	09/29/1976	8 V	09/29/1976
13N60E24BB	109	180	6	S	E	H,S	2650	23.70	SR	09/29/1976	4 V	09/29/1976
13N60E30AAAA	109	115	4	S	E	H	2850	36.70	SR	09/29/1976	5 V	09/29/1976
13N61E18CCA	109	60	2	--	--	U	2815	15.68	SR	11/08/1976	--	--
14N59E12CBD	109	916	--	--	--	P	2661	240.00	R	--	--	--
14N59E15ABBB	109	116	5	P	E	S	2800	87.50	SR	09/30/1976	5 V	09/30/1976
14N59E23AADA	109	120	5	S	E	H,S	2750	17.40	SR	09/30/1976	6 V	09/30/1976
14N59E35DDD	109	98	4	S	E	H,S	2800	61.20	SR	09/28/1976	8 V	09/28/1976
14N60E02CCC	109	180	4	S	E	H	2800	169.40	SR	09/29/1976	4 V	09/30/1976
14N60E07BDA	109	260	5	--	--	U	2677	90.00	R	05/31/1968	--	--
14N60E10DDD	109	47	2	--	--	U	2755	18.14	SR	11/08/1976	--	--
14N60E20CCC	109	200	5	S	E	S,H	2790	90.00	R	07/09/1971	--	--
14N60E26ADBC	109	200	6	S	E	S	2500	23.80	SR	09/30/1976	10 V	09/30/1976
14N60E26BAA	109	114	2	--	--	U	2804	41.03	SR	11/08/1976	--	--
14N60E34CBAD	109	130	4	P	H	U	2800	65.00	S	09/30/1976	--	--
14N60E36CDCA	109	80	24	S	E	H	2650	19.20	SR	09/30/1976	3 V	09/30/1976
14N61E06CCA	109	155	2	--	--	U	2739	54.71	SR	11/08/1976	--	--
14N61E06CCA2	109	124	2	--	--	U	2739	51.47	SR	11/08/1976	--	--
15N58E01CA	021	140	4	P	E	S	2600	47.00	SR	09/30/1976	5 V	09/30/1976
15N58E08BD	021	162	4	P	E	H,S	2650	30.10	SR	09/30/1976	4 V	09/30/1976
15N58E33AC	021	168	4	P	H	S	2700	52.40	SR	09/28/1976	1 V	09/28/1976
15N59E01AA	109	60	24	P	H	S	2700	11.50	SR	09/29/1976	4 V	09/29/1976
15N59E07AAAA	109	117	4	S	E	H,S	2600	52.90	SR	09/30/1976	10 V	09/30/1976
15N59E12AAA	109	202	4	--	--	S	2700	52.60	SR	09/29/1976	--	--
15N59E26DD	109	46	4	S	E	H,S	2650	14.50	SR	09/30/1976	6 V	09/30/1976
15N59E33DCC	109	180	4	P	E	H,S	2750	23.50	SR	09/30/1976	5 V	09/30/1976
15N59E36CCD	109	900	4.5	S	E	S,H	2641	180.00	R	08/26/1972	8 B	08/26/1972
15N60E18AAA	109	100	3	--	--	S	2550		F	--	--	--
15N60E22CCCD	109	150	6	S	E	H,S	2500	123.70	SR	09/30/1976	10 V	09/30/1976
15N60E26BCC	109	60	6	P	H	U	2700	26.60	SR	09/30/1976	4 V	09/30/1976
15N60E30ADD	109	380	6	S	E	S	2737	140.00	R	03/22/1968	--	--
15N60E32AAAD	109	220	6	S	E	H	2700	139.70	SR	09/30/1976	20 V	09/30/1976
16N58E18BD	021	110	24	P	G	S	2400	14.70	SR	09/28/1976	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
16N58E24DA	021	225	4	S	E	S	2550	113.80	SR	09/28/1976	10 V	09/29/1976
16N58E26AAAA	021	132	4	S	E	H,S	2450	18.00	SR	09/28/1976	10 V	09/28/1976
16N58E28DB	021	168	4	P	W	S	2550	112.20	SR	09/29/1976	0.5 V	09/29/1976
16N59E07DBB	109	310	5	P	W	S	--	175.00	R	03/27/1973	--	--
16N59E13CCB	109	1055	7	S	E	S,H	2577	235.00	R	08/21/1971	--	--
16N59E25BC	109	120	6	P	G	S	2650	67.60	SR	09/29/1976	7 V	09/29/1976
16N59E29ABA	109	265	4	P	E	S	2592	125.00	R	07/29/1967	7 B	07/29/1967
16N60E02BDDB	109	1220	4.5	S	E	H	2600	400.00	RP	09/29/1976	10 V	09/29/1976
16N60E31AAA	109	95	18	P	W	S	2650	26.80	SR	09/29/1976	6 V	09/29/1976
17N44E01ACAA	055	72	5.5	S	E	S	2542	30.00	RR	07/22/1975	30 R	10/24/1969
17N44E02BAAB	055	53	5	--	--	U	2570	27.60	S	07/23/1975	--	--
17N44E02BABA	055	40	5	P	H	S	2570	7.80	SR	07/23/1975	--	--
17N44E03ADCD	055	34	4	P	W	S	2580	24.60	SP	07/23/1975	2 V	07/23/1975
17N44E08AAAD	055	100	4	P	W	S	2620	95.00	SR	07/24/1975	--	--
17N44E10ABAA	055	108	4	P	G	S	2600	55.00	RR	07/24/1975	5 R	12/28/1960
17N44E12ABBC	055	--	5.5	--	--	--	2600	--		--	--	--
17N44E12ABBC2	055	100	5	P	W	S	2594	3.10	SR	07/22/1975	3 V	07/22/1975
17N44E13CCBD	055	140	4	P	H	S	2580	35.00	RR	07/28/1975	2 V	07/28/1975
17N44E16DABC	055	125	4	P	W	S	2597	62.80	SR	07/24/1975	--	--
17N44E17BAAD	055	47	5	P	W	S	2531	13.10	SP	07/23/1975	4 V	07/23/1975
17N44E19ABBB	055	180	4	P	W	S	2587	75.00	RP	07/23/1975	2 V	07/23/1975
17N44E23ADBB	055	140	6	--	--	U	2697	75.00	R	07/28/1975	--	--
17N44E24AAAA	055	317	4	S	E	S	2740	183.00	R	06/14/1973	10 R	06/14/1973
17N44E24DAAA	055	143	4.5	P	H	S	2680	115.00	RR	07/28/1975	5 V	07/28/1975
17N44E27ABBC	055	54	7	P	H	S	2578	1.50	SR	07/24/1975	--	--
17N44E29ABBB	055	180	5	P	W	S	2546	7.90	SR	07/23/1975	5 V	07/23/1975
17N44E30ABBC	055	203	4	P	W	S	2640	29.20	SP	07/23/1975	3 V	07/23/1975
17N44E32ADAA	055	42	6	P	E	S	2568	12.30	SR	07/24/1975	4 V	07/24/1975
17N44E32ADAC	055	785	--	S	E	H	2568		R	--	--	--
17N44E32ADAC2	055	47	6	P	E	S	2568	22.40	SR	07/24/1975	4 V	07/24/1975
17N44E32ADAC3	055	341	5	--	--	U	2568	19.60	S	07/24/1975	--	--
17N44E32ADAD	055	37	6	P	E	S	2568	12.90	SR	07/24/1975	--	--
17N44E34DDBA	055	126	4	P	W	S	2642	76.80	SR	07/24/1974	2 V	07/24/1975
17N44E35AABA	055	26	4	P	H	U	2599	0.20	S	07/24/1975	--	--
17N44E36ACDD	055	106	4	P	W	S	2559	13.80	SR	07/29/1975	5 V	07/29/1975
17N45E01DCAA	055	50	4	P	E	S	2740	23.10	SP	07/28/1975	3 V	07/28/1975
17N45E04BDBB	055	140	4	P	E	S	2800	120.20	SR	07/22/1975	2 V	07/22/1975
17N45E05CAAA	055	146	4.5	P	W	S	2720	13.70	SR	07/29/1975	--	--
17N45E06AAAA	055	120	4	P	H	S	2660	41.20	SR	07/29/1975	--	--
17N45E06ABBD	055	55	4	--	--	U	2640	34.00	S	07/22/1975	5 R	10/16/1963

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)		DATE DISCHARGE MEASURED
17N45E10ADCD	055	220	4	S	W	U	2762	85.60	S	07/29/1975	--		--
17N45E11ACDD	055	65	4	S	E	S	2709	35.00	RR	07/28/1975	5	V	07/28/1975
17N45E12BCBD	055	105	7	S	E	S	2700	35.00	RR	07/28/1975	5	V	07/28/1975
17N45E23BBAB	055	130	5	P	W	S	2786	76.30	SR	07/22/1975	1	V	07/22/1975
17N45E25bABC	055	86	6	P	W	S	2737	52.20	SP	07/29/1975	3	V	07/29/1975
17N58E10ACA	109	840	4	--	--	H	2260	8.05+	R	03/23/1970	--		--
17N58E10ADB	109	855	1.25	--	--	S	2260		F	--	8	V F	05/29/1971
17N58E19CAA	021	325	5	P	W	S	--	275.00	R	04/09/1973	--		--
17N58E34BAA	109	520	5	P	G	S	--	318.00	R	04/02/1973	--		--
17N58E35DDD	109	835	--	--	--	H	2450		F	--	5	V F	09/28/1976
17N59E14ACBD	109	145	4	P	W	S	2700	110.60	SP	09/28/1976	4	V	09/28/1976
17N59E15AC	109	330	4	P	W	S	2500	260.00	RP	09/29/1976	2	V	09/29/1976
17N59E23BACD	109	60	24	P	W	S	2550	30.40	S	09/28/1976	3	V	09/28/1976
17N59E24BCC	109	80	--	P	E	S	2500	31.00	S	09/28/1976	--		--
17N59E26DBA	109	230	4	P	E	H,S	2600	160.00	RR	09/29/1976	3	V	09/28/1976
17N59E36BA	109	80	4	P	G	S	2600	60.00	RR	09/29/1976	3	V	09/29/1976
17N60E05BBB	109	116	4	S	E	S	2400	76.60	SR	09/22/1976	--		--
17N60E07DCCB	109	151	4	S	E	S	2600	91.30	SR	09/28/1976	20	V	09/28/1976
17N60E17DCAB	109	62	4	P	E	U	2500	29.30	S	09/28/1976	--		--
18N43E02CC	033	87	4	P	W	U	2600	46.40	S	09/08/1975	--		--
18N43E04DB	033	39	4	P	W	U	2580	21.90	S	09/08/1975	--		--
18N43E06BB	033	60	4	P	E	S	2484	30.50	SR	09/08/1975	2	V	09/08/1975
18N43E10ACD	033	53	4	P	E	S	2619	23.10	SR	09/08/1975	--		--
18N43E10DABD	033	110	6	J	E	H	2582	28.10	SR	09/08/1975	--		--
18N43E12AAAB	033	160	4	S	E	H	2496	11.10	SR	09/05/1975	18	V	05/01/1972
18N43E13AAAA	033	300	--	--	--	--	2480		F	--	2	V F	09/05/1975
18N43E13BAAA	033	99	4	S	E	H	2540	60.30	SR	09/09/1975	--		--
18N43E13DD	033	150	--	--	--	S	2520		F	--	3	V F	09/05/1975
18N43E14AA	033	18	4	P	G	S	2530	7.00	SR	09/09/1975	4	V	09/09/1975
18N43E15CD	033	45	4	P	E	S	2600	28.90	SR	09/09/1975	2	V	09/09/1975
18N43E24AAAB	033	160	4	--	--	S	2515		F	--	2	V F	09/08/1975
18N43E28AABA	033	64	4	P	E	H,S	2700	37.10	SR	09/09/1975	3	V	09/09/1975
18N43E28CBDB	033	246	4	P	G	S	2585	120.00	R	08/27/1970	7	H	08/27/1970
18N43E28CD	033	106	4	P	G	S	2680	97.50	SR	09/08/1975	--		--
18N43E29AA	033	184	6	P	E	S	2660	80.00	SR	09/08/1975	--		--
18N44E08BAAB	055	78	2	--	--	U	2520	62.40	S	05/14/1976	--		--
18N44E13AAAB	055	278	4	--	--	U	2600	95.50	S	02/11/1976	3	V	05/05/1976
18N44E14ABAC	055	150	4	P	W	S	2580	60.70	SR	07/17/1975	--		--
18N44E14BABD	055	132	4	P	E	S	2580	39.10	SP	01/17/1975	2	V	07/17/1975
18N44E16CCCB	055	123	4	P	H	S	2500	0.60	SR	07/16/1975	8	V	07/16/1975

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
18N44E19BDAD	055	100	4	P	W	S	2480	50.00	RP	07/16/1975	3 V	07/16/1975
18N44E20BABC	055	73	4	P	W	S	2521	34.70	SR	07/16/1975	--	--
18N44E30BDCA	055	140	5	--	--	S	2480		F	--	1 V F	07/17/1975
18N44E30CDD	055	60	2	--	--	U	2485	12.89	S	08/31/1976	--	--
18N45E24CDDC	055	100	4.5	P	W	S	2740	70.00	RR	07/21/1975	16 R	06/30/1966
18N45E25BAAC	055	40	7	--	--	U	2760	9.20	S	07/21/1975	8 R	03/20/1961
18N45E27DADD	055	54	4	--	--	S	2800	34.90	VP	07/18/1975	2 V	07/18/1975
18N45E30DDCB	055	152	4.5	P	W	S	2680	120.00	R	07/21/1975	2 V	07/21/1975
18N45E34ACCD	055	364	5	S	E	H,S	2900	254.00	RR	1936	3 V	07/18/1975
18N45E34DBBB	055	426	4	S	E	S	2800		R	--	5 V	07/18/1975
18N45E34DBBB2	055	47	7	--	--	U	2800	39.00	S	07/18/1975	--	--
18N46E01BDAB	055	176	4	P	W	S	2720	145.10	SP	08/01/1975	3 V	08/01/1975
18N46E03DBDA	055	40	8	P	W	S	2620	10.10	SR	07/31/1975	--	--
18N46E04DBAB	055	71	18	P	H	S	2680	41.10	SR	07/31/1975	--	--
18N46E04DBCC	055	67	4	P	E	S	2680	49.30	SR	07/31/1975	4 V	07/31/1975
18N46E08CBBC	055	90	4	S	E	H,S	2720	47.00	RP	07/31/1975	3 V	07/31/1975
18N46E09BDAD	055	192	4	P	E	S	2740	99.80	SR	07/31/1975	4 V	07/31/1975
18N46E13ADDB	055	30	5	P	E	S	2600	3.50	SR	08/01/1975	5 V	08/01/1975
18N46E16DDAD	055	51	4	P	W	S	2700	--		--	--	--
18N46E17ADBB	055	48	4	P	E	S	2700	43.80	SR	07/31/1975	4 V	07/31/1975
18N46E18ADCA	055	13	6	S	E	H	2680	7.00	RP	08/01/1975	--	--
18N46E18ADCA2	055	18	22	S	E	H	2680	6.00	RR	08/02/1975	--	--
18N46E19ABBC	055	96	4	P	E	S	2740	81.30	SP	08/01/1975	4 V	08/01/1975
18N46E21DCBD	055	87	4	S	E	S	2620	19.10	SR	08/04/1975	2 V	08/04/1975
18N46E24ACCC	055	105	4	P	W	S	2640	26.60	SP	08/01/1975	8 V	08/01/1975
18N46E26BDCA	055	30	5	P	G	S	2600	10.10	SR	08/04/1975	--	--
18N46E26CBCA	055	300	4	P	E	H,S	2600	44.40	SR	08/04/1975	5 R	1972
18N46E27AADB	055	20	9	P	G	S	2580	5.30	SR	08/04/1975	--	--
18N46E27CACD	055	124	6	P	W	S	2680	56.30	SP	08/04/1975	5 V	08/04/1975
18N46E28DABC	055	60	6	S	E	S	2620	47.00	RP	08/04/1975	5 V	08/04/1975
18N46E28DBAD	055	140	6	S	E	H	2620	60.00	RP	08/04/1975	--	--
18N46E29ADDB	055	67	6	S	E	H,S	2640	47.00	RR	08/04/1975	5 V	08/04/1975
18N46E30ADAC	055	31	7.5	P	E	S	2660	10.10	SR	08/04/1975	5 V	08/04/1975
18N46E33BBCA	055	155	4	P	G	S	2720	84.80	SR	08/04/1975	--	--
18N46E33DAAA	055	136	4	P	G	S	2720	93.20	SR	08/04/1975	2 V	08/04/1975
18N46E35BBAD	055	174	4	S	E	S	2700	44.00	RR	08/04/1975	5 V	08/04/1975
18N47E07ADAB	055	156	5	P	W	S	2680	72.90	SR	08/21/1975	15 R	10/20/1961
18N47E18DBCC	055	75	5	P	E	S	2600	46.10	SP	08/01/1975	4 V	08/01/1975
18N57E03ABAB	021	36	4	S	E	H,S	2020	32.30	SR	09/14/1976	10 V	09/14/1976
18N57E09DBAB	021	28	4	S	E	S	1980	3.40	SR	09/14/1976	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)		DATE DISCHARGE MEASURED
18N57E11DAC8	109	688	1.25	--	--	S	2125		F	--	18 V	F	09/23/1976
18N57E15ADCC	109	705	4	--	--	S	2020		F	--	20 V	F	09/23/1976
18N57E24DDAA	109	675	4	--	--	S	2090		F	--	15 V	F	09/23/1976
18N57E29DDBD	021	131	6	S	E	S	2060	22.00	SR	09/22/1976	--		--
18N58E01CCC	109	1220	6	S	E	S	2370	110.00	R	06/20/1972	--		--
18N58E14CDBB	109	180	4	P	E	S	2220	88.00	SR	09/22/1970	20 V		09/22/1976
18N58E15BDAC	109	160	4	S	E	H,S	2180	73.70	SR	09/22/1976	10 R		10/15/1965
18N58E21CDDD	109	195	4	P	W	S	2320	62.40	SR	09/22/1976	2 V		09/22/1976
18N58E27BAAD	109	194	4	P	W	S	2380	42.50	SR	09/22/1976	2 V		09/22/1976
18N58E30DCCD	109	180	6	P	W	H,S	2300	78.60	SP	09/23/1976	1 V		09/23/1976
18N59E20BCDC	109	20	40	C	E	H	2350	10.90	SR	09/21/1976	2 V		09/21/1976
18N59E23CCC	109	380	4	--	--	U	2350	159.00	S	09/22/1976	--		--
18N59E25CCB	109	320	4	P	G	S	2450	142.40	SR	09/22/1976	5 V		09/22/1976
18N59E26CBDD	109	70	6	P	W	S	2400	62.00	SP	09/23/1976	2 V		09/23/1976
18N59E31DCC	109	300	4	P	W	S	2575	230.00	R	05/05/1966	--		--
18N59E33AAC	109	600	4	--	--	S	2450	257.20	S	09/23/1976	--		--
18N59E36CAC	109	44	4	P	W	U	2500	32.30	S	09/22/1976	--		--
18N60E04AD	109	160	4	P	G	S	2400	123.00	SR	09/21/1976	4 V		09/21/1976
18N60E07CC8	109	167	5.5	--	--	U	2250	68.40	S	09/22/1976	--		--
18N60E09AAD	109	470	5	--	--	U	--	200.00	R	05/26/1971	--		--
18N60E15CBBB	109	240	5	S	E	S	2400	71.40	S	09/23/1976	--		--
18N60E19BBB	109	380	5	--	--	U	--	180.00	R	05/17/1971	--		--
18N60E22DCCC	109	260	4	P	G	S	2400	130.00	RP	--	2 V		09/21/1976
18N60E29BDCC	109	167	4	S	E	S	2300	45.00	SR	09/22/1976	12 V		09/22/1976
18N60E32DADB	109	110	4	S	E	S	2250	65.50	SR	09/21/1976	5 V		09/21/1976
19N42E03BB	033	300	4	--	--	S	2300		F	--	1 V	F	09/01/1976
19N42E09AAAD	033	325	3	--	--	S	2300	17.16+	G	09/26/1978	10 V	F	09/26/1978
19N42E14AD	033	240	4	P	W	S	2350	81.50	SR	09/01/1976	1 R		1961
19N42E25DA	033	229	4	S	E	S	2400	154.70	SR	09/01/1976	--		--
19N42E27ADBB	033	189	4	P	E	H,S	2350	22.00	SR	09/01/1976	6 V		09/01/1976
19N42E33BBBB	033	370	--	S	E	S	2500	171.90	SR	08/31/1976	10 V		08/ /1976
19N42E33BBC8	033	370	4	S	E	S	2485	135.87	S	09/26/1978	10 V		09/26/1978
19N43E02BACA	055	113	5	P	G	S	2400	73.60	SR	08/05/1975	--		--
19N43E03ABBD	055	224	6	S	E	H,S	2440	110.90	SR	08/05/1975	--		--
19N43E04BADD	055	214	5	S	E	H,S	2540	197.10	SR	08/05/1975	2 V		08/05/1975
19N43E09ABDD	055	264	4	P	E	S	2640	234.00	SR	08/06/1975	2 V		08/06/1975
19N43E23AADC	055	236	3	P	E	U,S	2605	157.00	S	08/05/1975	2 R		06/02/1972
19N43E24AADC	055	80	5	J	E	S	2443	13.90	SR	08/05/1975	--		--
19N43E25DAAC	055	77	6	S	E	U	2540	38.90	S	08/05/1975	--		--
19N44E01ADCD	055	60	--	--	--	S	2620	26.60	S	07/15/1975	3 V		07/15/1975

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
19N44E19BBAB	055	141	6	P	E	S	2400	4.20	SR	07/17/1975	3 V	07/17/1975
19N44E20DADD	055	26	4	P	H	H,S	2500	3.70	SR	07/15/1975	12 V	07/15/1975
19N44E29ADCD	055	60	4	P	E	S	2440	26.60	SR	07/15/1975	3 V	07/15/1975
19N44E29CBBB	055	90	4	P	E	S	2440	60.00	R	07/15/1972	4 V	07/15/1975
19N44E31CCDA	055	78	4	P	E	S	2481	24.10	SR	07/15/1975	4 V	07/15/1975
19N45E04ABBA	055	28	4	P	W	U	2540	19.20	S	07/19/1975	3 V	07/19/1975
19N45E06CCCD	055	110	4	--	--	U	2580	49.72	S	10/08/1976	8 V	10/08/1976
19N45E10DDCA	055	189	5	S	E	H,S	2618	100.00	RP	07/17/1975	5 R	07/17/1975
19N45E11ACCA	055	66	4	P	E	S	2600	17.60	VP	07/19/1975	3 V	07/19/1975
19N45E22BBAC	055	43	4	P	E	S	2570	25.60	SR	07/19/1975	--	--
19N45E35DDBB	055	128	4	P	G	S	2780	91.30	SR	07/17/1975	5 V	07/17/1975
19N46E08ACDA	055	63	5	P	W	S	2740	50.00	RP	07/22/1975	0.5 V	07/22/1975
19N46E08CDAC	055	150	4	P	E	S	2760		P	--	0.5 V	07/22/1975
19N46E08CDDB	055	135	4	P	E	H,S	2760	105.00	RR	07/22/1975	5 R	07/22/1975
19N46E10CDCA	055	105	6	S	E	S	2700	46.80	SR	07/20/1975	6 R	07/20/1975
19N46E15CBCA	055	80	4	J	E	H	2660	70.00	RR	07/22/1958	15 R	1958
19N46E17ADBD	055	84	4	P	G	U	2720	76.10	S	07/22/1975	7 V	07/22/1975
19N46E17DAAC	055	135	4	P	E	S,H	2700	110.00	RR	12/19/1958	2 V	07/22/1975
19N46E17DAAD	055	157	5	S	E	H	2700	70.00	RR	06/10/1971	5 R	06/10/1971
19N46E21ABBB	055	102	4	P	G	S	2720	39.90	SR	07/22/1975	--	--
19N46E23ABDB	055	58	4	P	W	U	2660	19.40	S	07/23/1975	4 V	07/23/1975
19N46E27DBCA	055	48	4	P	E	S	2760	33.10	SR	07/23/1975	4 V	07/23/1975
19N46E28ABBA	055	120	4	P	W	S	2760	100.00	RR	1959	2 V	07/07/1975
19N46E29CAAA	055	131	4	P	W	S	2680	59.80	SR	07/23/1975	12 V	07/23/1975
19N46E32CCCD	055	93	4	P	G	S	2720	60.30	SR	07/23/1975	6 V	07/23/1975
19N46E32DCDD	055	56	4	P	E	S	2680	45.10	SR	07/23/1975	4 V	07/23/1973
19N47E01ABAD	055	100	4	P	W	S	2480	26.00	RR	--	30 V	07/28/1975
19N47E02ADBB	055	63	4	P	E	S,H	2540	55.10	SR	07/28/1975	3 V	07/28/1975
19N47E02ADBB2	055	90	--	S	E	--	2540		R	--	5 V	07/28/1975
19N47E08CCDC	055	85	--	J	E	H	2680	20.00	RR	07/29/1975	--	--
19N47E08DCDC	055	61	4	P	E	S	2680	37.20	SP	07/29/1971	1 V	07/29/1975
19N47E10ACDC	055	20	4	P	E	S	2600	13.10	SR	07/28/1975	4 V	07/28/1975
19N47E10DBBA	055	130	4	S	E	H	2600	75.00	RR	07/28/1975	18 R	07/28/1975
19N47E10DBBD	055	60	--	P	E	S	2600	25.00	RR	07/28/1975	2 V	07/28/1975
19N47E11DDDD	055	70	--	P	E	S	2540	30.00	RR	07/30/1975	--	--
19N47E13ABBA	055	50	4	P	E	S	2540	26.80	SR	07/28/1975	3 V	07/28/1975
19N47E13DDCB	055	33	4	P	W	S	2540	25.20	SP	07/28/1975	2 V	07/28/1975
19N47E14BAAA	055	32	--	S	E	H	2580	16.00	RR	07/30/1975	--	--
19N47E14BAAA2	055	28	6	S	E	S	2580	18.00	RR	07/30/1975	--	--
19N47E14DDBB	055	114	4	P	H	S	2600	54.90	SR	07/30/1975	3 V	07/30/1975

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
19N47E17BCCB	055	44	4	P	E	S	2600	14.90	SR	07/29/1975	--	--
19N47E20ADDC	055	100	4	S	E	H	2580		R	--	--	--
19N47E20ADDC2	055	20	51	P	E	S	2580	7.00	SR	07/29/1975	6 V	07/29/1975
19N47E20CDAC	055	18	57	P	W	S	2600	6.00	VR	07/29/1975	1 V	07/29/1975
19N47E21CD8D	055	23	57	--	--	U	2560	16.80	S	07/29/1975	--	--
19N47E25DBCB	055	184	4	P	G	S	2600	108.00	RR	04/17/1961	30 R	04/17/1961
19N47E26CDDC	055	60	48	P	W	S	2560	25.80	VR	07/31/1975	2 V	07/31/1975
19N47E26DCDD	055	50	6	P	G	U	2540	36.00	R	07/31/1975	--	--
19N47E28BCBC	055	55	4	--	--	U	2580	41.30	S	08/02/1975	--	--
19N47E30DCDD	055	37	5.5	--	--	U	2680	24.70	S	07/01/1975	--	--
19N47E32BCCA	055	75	4	--	--	U	2640	50.90	S	07/30/1975	--	--
19N47E33DBBB	055	99	4	P	W	S	2620	81.80	SR	07/20/1975	--	--
19N47E36DCBB	055	68	6	P	G	S	2480	16.00	RR	07/31/1975	22 R	08/26/1963
19N48E02CBAA	055	160	4	S	E	S	2500	72.00	RR	--	--	--
19N48E02CBDA	055	109	4	S	E	S	2500	18.40	SR	11/18/1975	6 V	11/18/1975
19N48E08BBCA	055	132	6	P	H	U	2500	108.50	S	08/04/1975	--	--
19N48E10BBCC	055	114	6	--	--	U	2460	36.00	R	01/18/1954	20 R	01/18/1954
19N48E10CADC	055	300	5	S	E	U	2460	100.00	R	08/29/1971	50 R	08/28/1971
19N48E10CCCD	055	1623	12	--	--	P	2517	304.10	S	02/12/1976	--	--
19N48E10DACA	055	1518	12.75	--	--	P	2442	159.00	V	06/17/1972	--	--
19N48E11CBDC	055	49	6	P	E	S,H	2460	24.30	SR	11/13/1975	3 V	11/13/1975
19N48E12BAAA	055	80	6	S	E	S	2480	38.00	RR	11/18/1975	--	--
19N48E12BAAB	055	80	6	S	E	H	2480	46.60	SR	11/18/1975	5 V	11/18/1975
19N48E12CCDC	055	86	4	S	E	C	2500	39.80	SR	11/18/1975	--	--
19N48E12DABC	055	137	4	S	E	H	2520	62.20	SR	--	--	--
19N48E12DCCA	055	130	6	S	E	S	2520	20.00	SR	11/18/1975	--	--
19N48E15BDDC	055	78	4	S	E	P	2440	18.30	SR	08/02/1975	25 R	06/06/1961
19N48E15DBBB	055	50	4	S	E	H	2440	18.60	SR	08/02/1975	--	--
19N48E16DDDB	055	72	6	J	E	H,S	2480	14.00	RR	08/01/1975	15 R	08/ /1955
19N48E19AADD	055	36	--	P	E	S	2480	12.00	RR	08/04/1970	--	--
19N48E19DCBA	055	159	4	S	E	S	2620	99.00	RR	08/04/1975	20 R	02/18/1961
19N48E20DDCD	055	15	36	P	E	S	2480	11.50	V	08/01/1975	2 V	08/01/1975
19N48E20DDDC	055	24	6	J	E	H	2480	20.00	RR	08/01/1975	2 V	08/01/1975
19N48E20DDDC2	055	26	4	S	E	S	2480	20.90	VR	08/01/1975	12 R	1973
19N48E28BCBB	055	20	3	P	E	S	2460	18.00	V	08/02/1975	4 V	08/02/1975
19N48E28BCBC	055	43	6	J	E	H	2460	35.50	SR	08/02/1975	--	--
19N48E33ACBC	055	90	6	P	E	U	2480	14.70	S	08/02/1975	--	--
19N48E34DBAA	055	60	6	J	E	H	2580	45.00	RR	--	5 R	08/02/1975
19N48E34DBAD	055	40	24	P	E	S	2580	24.00	RR	1974	6 R	1940
19N49E13CABA	055	15	24	P	H	U	2580	10.20	V	10/29/1975	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)		DATE DISCHARGE MEASURED
19N49E13CACD	055	23	24	P	H	U	2580	6.80	V	10/29/1975	--		--
19N49E13CACD2	055	60	6	P	E	S	2580	30.00	RR	10/29/1975	--		--
19N49E22CBCB	055	15	24	J	E	H	2580	13.00	RR	--	7	R	11/13/1975
19N49E27ABBC	055	60	5	S	E	S	2680	42.00	RR	10/29/1975	--		--
19N49E27DDBD	055	86	24	J	E	H,S	2680	30.00	RP	--	--		--
19N49E33ACAA	055	66	4	P	G	S	2680	40.40	SR	10/29/1975	--		--
19N49E34AABD	055	81	4	S	E	S	2700	22.50	SP	10/29/1975	16	V	10/29/1975
19N55E04DDAD	021	38	4	S	E	H	2250	26.20	SP	09/14/1976	4	V	09/14/1976
19N55E06BAAD	021	173	4	P	G	S	2670	119.50	SR	09/10/1976	3	V	09/10/1976
19N55E12BDDD	021	89	4	P	W	S	2500	64.90	SR	09/14/1976	4	V	09/14/1976
19N55E14BCDD	021	285	5	P	E	S	2730	256.80	SP	09/13/1976	2	V	09/13/1976
19N55E18BDDD	021	24	3.7	P	H	U	2445	20.90	S	09/10/1976	--		--
19N55E22CACD	021	52	4	P	H	S	2470	25.40	SR	09/13/1976	5	V	09/13/1976
19N55E26CCCA	021	21	8	P	E	S	2350	17.10	SR	09/13/1976	10	V	09/13/1976
19N56E26CBCA	021	120	24	P	E	H,S	2450	47.60	SR	09/22/1976	6	V	09/22/1976
19N57E08ACCC	083	100	36	P	E	S	2240	94.70	SP	09/13/1976	1	V	09/13/1976
19N57E10BBDC	083	160	4	P	G	S	2220	123.20	SR	09/13/1976	--		--
19N57E21BABB	083	220	5.5	S	E	H	2240	171.20	SR	09/13/1976	8	V	09/13/1976
19N57E27DDAC	083	17	4	--	--	U	1998	8.48	S	11/06/1975	--		--
19N58E02DBBB	083	1029	1.25	--	--	H,S	2180		F	--	10	R F	09/14/1976
19N58E03DBBB	083	450	4	--	--	S	1950		F	--	1	V F	09/28/1976
19N58E04DDC	083	915	1.25	--	--	S	1960	207.00+	R	10/01/1971	--		--
19N58E04DDCA	083	400	4	--	--	S	1940		F	--	1	V F	09/28/1976
19N59E02ACDD	083	300	4	S	E	S	2370	226.10	SR	09/21/1976	4	V	09/21/1976
19N59E05DCDB	083	161	4	P	W	U	2180	107.00	S	09/16/1976	--		--
19N59E07AAD	083	1110	8	--	--	S	2165	69.00+	R	05/28/1968	--		--
19N59E10CCBC	083	285	4	P	--	U	2310	111.50	SR	09/22/1976	--		--
19N59E12BCCA	083	20	6	P	E	S	2348	4.60	SP	09/22/1976	2	V	09/22/1976
19N59E13BDAD	083	310	4	S	E	S	2360	220.80	SR	09/22/1976	--		--
19N59E25ABAB	083	133	6	P	E	S	2236	88.10	SP	09/21/1976	3	V	09/21/1976
19N60E17CD	083	72	4	P	W	S	2300	45.00	SP	09/22/1976	6	V	09/22/1976
19N60E27AC	109	84	4	S	E	H,S	2250	47.60	SP	09/22/1976	25	V	09/22/1976
19N60E28BA	109	120	6	S	E	S	2300	102.60	SR	09/22/1976	10	V	09/22/1976
19N60E28CB	109	41	4	P	H	S	2200	13.50	SR	09/22/1976	10	V	09/22/1976
19N60E32AB	109	101	4	P	E	S	2200	36.50	SR	09/21/1976	6	V	09/21/1976
19N60E34BA	109	84	5	P	E	S	2250	32.90	SR	09/21/1976	12	V	09/21/1976
20N42E22CA	033	80	4	P	E	S	2350	44.90	SR	09/01/1976	2	V	09/01/1976
20N42E23AB	033	--	4	--	--	H,S	2300		F	--	1	V F	09/01/1976
20N42E28CD	033	--	2.25	--	--	S	2350		F	--	1	V F	09/01/1976
20N42E34AB	033	225	4	--	--	S	2300		F	--	30	V F	09/01/1976

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
20N42E34AC	033	250	5	--	--	H,S	2300		F	--	45 V F	09/01/1976
20N42E34CA	033	120	4	--	--	H,S	2300		F	09/01/1976	0.9 VF	09/01/1976
20N43E01AABD	055	288	6	P	W	U	2480	195.60	S	08/07/1975	11 R	07/09/1967
20N44E24BDAC	055	107	5.5	P	E	S	2561	42.80	SR	08/19/1975	--	--
20N44E27CBDA	055	224	5	P	E	S	2560	122.60	SR	08/20/1975	--	--
20N45E08ODAC	055	1300	8	P	G	S	2650	425.00	RR	08/19/1975	--	--
20N45E10DCCD	055	122	5.5	P	G	S	2656	50.00	RR	08/19/1975	--	--
20N45E11BADC	055	186	6	P	E	S	2640	164.80	SR	08/20/1975	3 V	08/20/1975
20N45E17CCBB	055	281	5.5	P	G	S	2680	207.80	SR	08/18/1975	6 V	08/20/1975
20N45E19DDDD	055	122	6	--	--	U	2560	83.40	V	08/19/1975	--	--
20N45E20DDBC	055	120	4	--	--	U	2545	60.35	S	10/05/1976	9 V	10/05/1976
20N45E22BCCA	055	21	4	P	E	S	2560	14.40	SR	09/05/1975	8 V	09/05/1975
20N45E22DACC	055	104	4	P	E	U	2636	97.30	V	08/14/1975	--	--
20N45E27ACCC	055	42	4	P	E	S	2590	36.30	VP	08/14/1975	0.8 V	08/14/1975
20N45E28BABD	055	56	6.5	P	G	S	2519	24.50	SR	09/05/1975	--	--
20N45E30DBAB	055	57	4	--	--	U	2495	28.36	S	10/05/1976	8 V	10/05/1976
20N45E34DBCC	055	278	4	--	--	U	2610	43.00	S	02/11/1976	10 V	05/07/1976
20N45E35DAAB	055	32	4	--	--	U	2541	28.90	S	08/13/1975	--	--
20N46E02ADCD	055	30	36	P	E	S	2579	16.50	SR	08/08/1975	7 V	08/08/1975
20N46E04CACC	055	105	4	P	E	S	2639	27.10	SR	09/20/1975	3 V	09/20/1975
20N46E09BDDC	055	180	5.5	S	G	S	2735	107.20	SR	08/20/1975	--	--
20N46E11AACC	055	76	5	--	--	U	2581	15.60	S	08/07/1975	--	--
20N46E11ADBC	055	60	4	J	E	S	2560	45.00	RR	08/07/1975	--	--
20N46E13BBCC	055	60	4	J	E	H	2578	45.00	RR	08/07/1975	--	--
20N46E19BBAC	055	84	5	P	W	U	2710	52.50	S	08/13/1975	3 R	1961
20N46E20CADA	055	170	4	S	E	S	2791	147.40	SR	08/13/1975	--	--
20N46E24CCDD	055	144	--	S	E	H	2564	38.30	SR	08/15/1975	10 R	08/15/1975
20N46E24CDCC	055	17	4	J	E	S	2561	12.00	SR	08/15/1975	--	--
20N46E24DBCB	055	44	4	P	G	S	2541	31.40	SR	09/10/1975	--	--
20N46E27BCAB	055	84	4	S	E	S	2635	34.40	SR	08/12/1975	10 V	08/12/1975
20N46E28ABBC	055	120	6	S	E	H	2637	23.00	SR	08/12/1975	--	--
20N46E28BAAD	055	61	4	P	E	S	2643	17.80	SR	08/12/1975	3 V	08/12/1975
20N46E33BBAC	055	119	6.5	P	W	U	2675	67.40	S	08/13/1975	8 R	04/10/1958
20N46E34BCAA	055	181	4	S	E	S	2700	106.00	SR	08/12/1975	8 V	08/12/1975
20N46E35DCAC	055	75	4	S	E	S	2680	68.60	SR	08/12/1975	4 V	08/12/1975
20N46E36BBDA	055	54	6.5	P	E	S	2600	14.80	SR	08/13/1975	5 V	08/13/1975
20N47E04BBBB	055	247	4	--	--	U	2565	41.74	S	10/06/1976	--	--
20N47E04DCBD	055	24	16	P	E	S	2580	12.00	SR	08/15/1975	--	--
20N47E04DCCB	055	70	6	P	E	S	2580	15.10	SR	08/15/1975	--	--
20N47E10ACBD	055	35	15	P	G	S	2560	9.40	SR	08/15/1975	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
20N47E18ABAD	055	78	4	--	--	U	2647		D	--	--	--
20N47E29ABAA	055	161	4	S	E	H	2520	70.50	SR	09/10/1975	--	--
20N47E29ABAA2	055	108	4	S	E	U	2520	51.50	S	09/10/1975	--	--
20N47E29BBDB	055	25	6	S	E	S	2520	13.40	SR	09/10/1975	--	--
20N47E30ACCC	055	60	6	S	E	H	2600	25.00	RR	09/10/1975	20 R	10/06/1972
20N47E30ACCC2	055	116	4	J	E	H	2600	34.40	SR	09/10/1975	5 R	09/10/1975
20N47E30ACCC3	055	25	24	P	E	S	2600	15.80	SR	09/10/1975	5 R	09/10/1975
20N47E30DBBA	055	110	5	S	E	S	2600	30.00	RR	--	--	--
20N47E31DDBC	055	60	4	P	E	S	2600	39.80	SR	09/10/1975	--	--
20N47E36ADDD	055	220	4	--	--	U	2495	46.10	S	02/11/1976	3 V	04/19/1976
20N48E02CCCC	055	79	4	P	E	S	2480	40.70	SR	09/13/1975	3 V	09/13/1975
20N48E02CCCC2	055	68	6	S	E	H	2480	41.40	SR	09/13/1975	--	--
20N48E04ACDC	055	194	4	P	E	S	2480	115.00	SR	09/12/1971	--	--
20N48E04DCDD	055	30	12	S	E	H	2480	18.10	SR	09/27/1975	--	--
20N48E06CAAC	055	81	4	S	E	S	2560	34.60	SR	09/11/1975	5 R	1974
20N48E06DCDD	055	50	4	S	E	S	2540	31.70	SR	09/12/1975	20 R	09/12/1975
20N48E07BDAC	055	55	6	P	E	S	2580	26.40	SR	09/12/1975	4 V	09/12/1975
20N48E08AAAC	055	32	4	S	E	S	2500	11.80	SR	09/12/1975	10 V	09/12/1975
20N48E08AAAC2	055	40	4	S	E	S	2500	5.50	SR	09/12/1975	9 V	09/12/1975
20N48E08AABA	055	80	4	S	E	H	2500	24.20	SR	09/12/1975	--	--
20N48E08CDCA	055	110	6	S	E	S	2600	59.80	SR	09/12/1975	--	--
20N48E10ABAB	055	90	6	P	H	U	2460	17.60	S	09/13/1975	--	--
20N48E10ABAB2	055	27	18	S	E	S	2460	22.10	SR	09/13/1975	--	--
20N48E11BBCC	055	101	6	S	E	H	2460	19.10	SR	09/12/1975	--	--
20N48E11BBCC2	055	90	5	P	E	U	2460	20.10	S	09/12/1975	--	--
20N48E15BAAC	055	200	4	S	E	U	2520	68.80	S	09/13/1975	--	--
20N48E20BACD	055	89	4	--	--	U	2580	49.90	S	09/11/1975	--	--
20N48E20CDCD	055	60	6	P	H	U	2600	32.00	S	09/11/1975	--	--
20N48E22CCCD	055	276	4	P	E	H	2600	93.80	SR	09/27/1975	2 V	09/27/1975
20N48E28DCBD	055	25	4	S	E	S	2540	12.00	RR	--	--	--
20N48E28DCBD2	055	43	5	S	E	H	2540	20.00	RR	--	--	--
20N48E28DDCA	055	120	4	S	E	H	2480	30.00	RR	08/20/1975	--	--
20N48E36BAAB	055	65	6	--	--	U	2500	56.50	S	11/19/1975	--	--
20N48E36BCDD	055	97	4	--	--	U	2480	38.30	S	11/18/1975	--	--
20N49E07CBCA	055	350	--	S	E	H	2640	190.00	R	--	--	--
20N49E08ABBA	055	50	24	P	H	S	2440	11.00	SR	09/22/1975	--	--
20N49E17ADDA	055	45	--	P	W	S	2460	22.10	SP	10/11/1975	2 V	10/11/1975
20N49E18CCCD	055	12	7	P	H	U	--	4.60	S	12/30/1975	--	--
20N49E18CCDC	055	120	4	--	--	U	2420	25.60	S	02/11/1976	10 V	05/06/1976
20N49E27AADC	055	29	6	P	G	S	2480	19.40	SR	11/18/1975	7 V	11/18/1975

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
20N49E34DDCC	055	183	4	S	E	S	2620	66.30	SR	11/18/1975	6 V	11/18/1975
20N49E35AADD	055	28	6	--	--	S	2500	5.00	R	11/18/1975	--	--
20N50E06ABBB	021	63	5	P	E	H	2320	34.80	SR	10/02/1975	4 V	10/02/1975
20N50E06BACD	021	38	24	P	H	S	2360	31.00	SR	10/02/1975	--	--
20N50E11ACCC	021	19	6	P	W	S	2500	5.50	SP	10/05/1975	2 V	10/05/1975
20N50E12BABA	021	76	6	--	--	S	2440	20.00	RP	10/11/1975	2 V	10/11/1975
20N50E13ABBC	021	61	4	P	W	S	2580	28.30	SP	10/04/1975	1 V	10/04/1975
20N50E14CABA	021	54	18	P	E	S	2500	34.60	SR	10/05/1975	3 V	10/05/1975
20N50E16ABBD	021	186	6	P	E	S	2480	80.40	SR	10/14/1975	4 V	10/14/1975
20N50E16CACB	021	47	4	--	--	U	2480	41.30	S	10/05/1975	--	--
20N50E18BDCD	021	104	6	P	E	S	2480	74.20	SR	10/06/1975	3 V	10/06/1975
20N50E18CDDA	021	110	8	S	E	H,S	2480	73.00	SR	10/01/1975	4 R	06/21/1971
20N50E19DACB	021	70	6	--	--	--	2520	22.30	S	10/05/1975	--	--
20N50E22DBBD	021	14	36	J	E	H	2480	14.00	VR	10/06/1975	--	--
20N50E24DDCA	021	25	4	S	E	S	2580	10.00	RR	10/04/1975	--	--
20N50E26C8CC	021	70	--	S	E	H	2600	25.00	RR	10/06/1975	--	--
20N50E28DDDD	021	87	4	--	--	U	2540	56.60	S	10/04/1975	--	--
20N50E30AAAB	021	87	4	S	E	S	2560	68.10	SR	10/04/1975	--	--
20N50E30AABD	021	84	4	P	E	S	2560	76.70	SR	10/01/1975	--	--
20N51E07ADAB	021	147	4	P	E	S	2600	61.80	SR	10/04/1975	2 R	11/30/1961
20N51E17ADAD	021	239	4	S	E	S	2680	119.30	SR	10/09/1975	8 V	10/09/1975
20N51E18DADB	021	21	12	P	E	S	2520	7.10	SP	10/09/1975	--	--
20N51E30CAAD	021	35	18	S	E	H	2620	26.40	SR	--	--	--
20N51E30CAAD2	021	125	4	S	E	S	2620	122.00	SR	10/07/1975	--	--
20N51E30CAAD3	021	14	36	P	E	S	2620	3.30	SR	10/08/1975	--	--
20N51E32CABC	021	128	6	P	E	S	2680	46.40	SR	10/08/1975	--	--
20N51E32CABC2	021	49	24	--	--	U	2680	18.60	S	10/08/1975	--	--
20N53E16AADB	021	115	5	P	W	H	2790	79.10	SP	09/02/1976	3 V	09/02/1976
20N53E26AAAD	021	81	18	S	E	S	2685	17.40	SR	09/02/1976	20 V	09/02/1976
20N53E26BCCB	021	69	18	P	W	U	2703	32.80	S	09/02/1976	--	--
20N53E32DBBD	021	23	18	P	E	S	2730	6.60	SR	09/02/1976	8 V	09/02/1976
20N54E01CBBB	021	33	8	P	E	S	2664	21.70	SR	09/09/1976	3 V	09/09/1976
20N54E01DCDD	021	220	4	--	--	U	2660	57.80	S	10/08/1975	10 V	05/04/1976
20N54E02BCAA	021	116	4	P	E	H,S	2730	57.20	SR	09/09/1976	5 V	09/09/1976
20N54E06DCCA	021	29	24	P	H	U	2650	11.20	S	09/01/1976	6 E	09/01/1976
20N54E18AC	021	40	18	P	W	H,S	2650	21.90	SR	09/08/1976	4 V	09/08/1976
20N54E19DC	021	108	5	P	E	H	2650	76.50	SR	09/08/1976	--	--
20N54E28DCDA	021	15	24	P	W	U	2550	11.00	S	09/09/1976	--	--
20N55E06CDCC	021	79	3	P	E	S	2650	37.50	SR	09/09/1976	3 V	09/09/1976
20N55E12BC	021	150	3.7	--	--	S	2600	40.70	SR	09/11/1976	4 V	09/11/1976

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)		DATE DISCHARGE MEASURED
20N55E15BACB	021	42	8	P	G	S	2530	16.80	SR	09/10/1976	15	V	09/10/1976
20N55E19DBCD	021	53	18	P	E	H,S	2695	22.00	SR	09/10/1976	3	V	09/10/1976
20N55E20CBCA	021	66	12	P	E	S	2750	26.40	SP	09/10/1976	4	V	09/10/1976
20N55E22BBCC	021	60	5	P	G	S	2730	33.00	SR	09/13/1976	--		--
20N55E30DABD	021	42	5.7	S	E	S	2760	34.20	SP	09/10/1976	6	V	09/10/1976
20N56E01DB	021	72	6	P	G	S	2400	53.20	SR	09/11/1976	5	V	09/11/1976
20N56E09AD	021	257	4	P	G	S	2450	160.80	SR	09/14/1976	2	V	09/14/1976
20N56E13CBAA	021	121	8	P	G	S	2260	36.60	SR	09/11/1976	10	V	09/11/1976
20N56E18ADBB	021	26	3.7	P	E	S	2430	9.20	SR	09/14/1976	2	V	09/14/1976
20N56E24CBDB	021	103	6	S	E	H	2230	26.10	SP	09/11/1976	8	R	09/11/1976
20N56E25BABB	021	90	4	P	E	S	2230	21.60	SR	09/11/1976	3	V	09/11/1976
20N56E26DCCB	021	85	6	S	E	H	2270	48.30	SR	09/14/1976	9	V	09/14/1976
20N56E32CDAA	021	55	5	S	E	H	2330	14.60	SR	09/14/1976	10	V	09/14/1976
20N57E16CDDD	083	273	6	S	E	H	2385	230.80	SR	09/16/1976	5	V	09/16/1976
20N57E21CDD	083	392	4	S	E	H	2365	230.00	R	07/18/1967	--		--
20N57E21CDDA	083	392	4	S	E	H,S	2365	256.60	SR	09/16/1976	10	R	09/16/1976
20N57E27DCDC	083	223	4	S	E	H	2240	149.00	SR	09/09/1976	12	V	09/09/1976
20N57E30DDAB	083	60	24	P	E	S	2260	40.40	SR	09/12/1976	4	V	09/12/1976
20N58E24ABAA	083	106	4	--	--	S	1945		F	09/16/1976	2	V	F 09/16/1976
20N58E25CCAC	083	138	4	--	--	S	1970		F	09/16/1976	6	V	F 09/16/1976
20N58E29CBC	083	1083	5	--	--	H	2015		F	--	75	R	F 08/20/1970
20N58E34DDD	083	620	5	--	--	S	1975	80.50+	R	09/15/1971	--		--
20N59E03DBA	083	1320	6	--	--	S	2180	57.50+	R	05/09/1972	2	V	F 08/14/1975
20N59E04DAC	083	242	4	--	--	S	2090	120.00	R	10/10/1964	--		--
20N59E04DDDB	083	242	4	P	H	U	2100	131.20	S	09/16/1976	--		--
20N59E11BDC	083	1390	5	--	--	S	2140	57.50+	R	04/02/1971	1	V	F 08/14/1975
20N59E13ABBA	083	177	4	P	H	S	2260	175.60	SR	09/21/1976	--		--
20N59E35CBAC	083	230	5	--	--	S	2357	189.90	S	09/21/1976	--		--
20N60E04BAAD	083	--	--	S	E	S	2280	277.90	SP	09/15/1976	2	V	09/15/1976
20N60E10BDBC	083	250	4	P	E	S	2337	209.30	SR	09/15/1976	4	V	09/15/1976
20N60E17AD	083	140	4	P	E	S	2400	115.70	SP	09/24/1976	2	V	09/24/1976
20N60E19CCCB	083	20	8	P	E	S	2140	7.30	SR	09/21/1976	6	V	09/21/1976
21N42E14CC	033	108	4	P	E	S	2350	90.60	S	08/31/1976	--		--
21N42E15DDCC	033	256	6	S	E	S	2340	91.10	S	08/31/1976	5	V	09/22/1978
21N42E18BA	033	225	4	--	--	U	2450	189.20	S	08/31/1976	--		--
21N43E36BCCD	055	18	4	--	--	U	2296	6.40	S	11/04/1975	--		--
21N43E36DAAC	055	70	5	S	E	S	--	46.60	S	08/31/1976	--		--
21N43E36DAAD	055	--	5	S	E	--	2360	46.00	S	--	--		--
21N44E04DCCB	055	160	5.5	S	E	U	2200	19.90	S	08/31/1976	4	R	11/05/1964
21N44E11CDAC	055	98	4	S	E	S	2440	40.00	RR	09/03/1975	15	R	10/23/1964

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
21N44E11DCDA	055	155	6	S	E	H,S	2440	100.00	RR	09/03/1975	5 V	09/03/1975
21N44E16DBCD	055	15	54	--	--	S	--	12.20	VR	08/31/1976	30 V	08/31/1976
21N44E23BBDC	055	123	4	S	E	S	2460	43.80	SR	08/07/1975	4 V	08/07/1975
21N44E23CBCD	055	112	4	S	E	S	2516	58.10	SR	08/07/1975	--	--
21N44E24BDCC	055	117	4	--	--	U	2510	59.00	S	08/07/1975	--	--
21N44E28DBCC	055	117	5	S	E	S	2500	109.70	SR	08/06/1975	8 V	08/06/1975
21N45E02DADB	055	146	4	--	--	U	2513	103.20	V	09/05/1975	--	--
21N45E05CDBB	055	225	4	P	E	S	2541	131.70	SR	09/04/1975	5 V	09/04/1975
21N45E05DDCA	055	125	6	S	E	H	2505	70.00	RR	--	--	--
21N45E07BCDD	055	230	8	S	E	S	2620	212.70	SR	09/04/1975	--	--
21N45E08CACC	055	67	4	P	H	U	2500	51.60	S	09/04/1975	--	--
21N45E08CACC2	055	12	48	P	H	U	2500	6.30	S	09/04/1975	--	--
21N45E08DBCC	055	18	6	P	H	U	2479	13.50	S	09/04/1975	--	--
21N45E10BACC	055	125	4	S	E	S	2529	63.60	SR	09/20/1975	--	--
21N45E15BAAA	055	67	4	P	E	S	2520	17.80	SP	09/03/1975	6 V	09/03/1975
21N45E16ABBC	055	201	5	S	E	S	2500	34.20	SR	09/03/1975	10 V	09/03/1975
21N45E16ADAB	055	120	4	S	E	H	2497	14.80	SR	09/03/1975	--	--
21N45E16ADAB2	055	35	6	P	W	S	2497	19.00	RR	--	--	--
21N45E16DDDB	055	61	4	P	H	U	2500	11.80	S	09/03/1975	--	--
21N45E17ADCA	055	99	4	S	E	S	2460	55.20	SR	09/04/1975	--	--
21N45E17ADCA2	055	246	5	S	E	H	2460	80.00	RP	--	--	--
21N45E18CAAB	055	150	6	S	E	H,S	2460	20.60	SR	09/04/1975	6 V	09/04/1975
21N45E20DCCD	055	89	4	S	E	U	2480	22.50	S	09/04/1975	4 V	09/04/1975
21N45E23DCBB	055	38	8	--	--	U	2540	15.70	S	09/03/1975	--	--
21N45E26DAAD	055	95	4	--	--	U	2585	50.43	S	10/06/1976	0.5 V	10/06/1976
21N45E29DABC	055	185	8	--	--	U	2520	41.90	S	08/19/1975	--	--
21N45E34BBDA	055	189	4	S	E	H	2520	37.20	SR	08/19/1975	15 R	07/ /1955
21N45E34BBDA2	055	17	6	J	E	S	2520	13.10	SR	08/18/1975	2 V	08/18/1975
21N45E35BCDC	055	118	6	P	E	S	2609	67.30	SR	08/11/1975	2 V	08/11/1975
21N45E36ACCC	055	169	4	P	H	U	2730	167.50	S	09/03/1975	--	--
21N46E05AABA	055	100	4	P	E	S	2482	79.10	SR	09/05/1975	2 V	09/05/1975
21N46E09CDBC	055	85	4	P	W	S	2581	60.00	SP	08/08/1975	4 V	08/08/1975
21N46E15ADDA	055	200	6	S	E	S	2590	71.80	SR	08/08/1975	--	--
21N46E17BCDA	055	206	6	P	W	S	2700	184.20	SR	08/08/1975	--	--
21N46E19BCDA	055	105	4	P	E	S	2656	80.80	SR	09/20/1975	10 V	09/20/1975
21N46E24CDCA	055	129	4	P	W	S	2651	90.20	SR	08/12/1975	--	--
21N46E25CAAC	055	50	4	P	W	S	2621	45.20	SR	08/13/1975	4 V	08/13/1975
21N46E29AACA	055	110	6	--	--	U	2717	--		--	--	--
21N46E29ACDA	055	240	4	S	E	H	2655	164.00	SR	09/20/1975	11 R	09/20/1975
21N46E29DCCB	055	112	4	P	H	S	2680	44.20	SR	09/20/1975	4 R	1961

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
21N46E30BACC	055	110	4	P	E	S	2602	30.00	RR	09/20/1975	3 V	09/20/1975
21N46E32CCAA	055	215	4	S	E	S	2720	130.40	SR	09/20/1975	3 V	09/20/1975
21N46E32CCCC	055	250	4	P	W	S	2680	198.90	SR	09/20/1975	2 V	09/20/1975
21N47E03CDAC	055	180	4	S	E	H	2680	130.00	RR	09/09/1975	1 R	1960
21N47E03CDCC	055	60	4	P	E	S	2660	27.90	SR	09/09/1975	--	--
21N47E04BCAA	055	76	6	P	G	S	2600	4.30	VR	08/13/1975	--	--
21N47E08CDCD	055	71	25	P	H	S	2580	54.50	SR	09/09/1975	--	--
21N47E10ABBC	055	81	4	P	E	S	2680	63.70	SR	09/09/1975	--	--
21N47E10ADDD	055	122	4	--	--	S	2700	109.20	SR	09/10/1975	2 V	09/10/1975
21N47E12CCCC	055	213	4	--	--	U	2600	55.82	S	10/07/1976	--	--
21N47E17BDDA	055	26	4	S	E	S	2580	4.60	SR	08/12/1975	8 V	08/12/1975
21N47E17DAAB	055	44	5	S	E	H	2580	18.00	RP	08/12/1975	--	--
21N47E17DAAD	055	22	4	S	E	H,S	2580	14.80	SR	08/12/1975	--	--
21N47E18DCAA	055	16	4	P	G	S	2600	2.50	SR	08/12/1975	--	--
21N47E21DBAC	055	77	4	--	--	U	2580	69.20	S	08/12/1975	--	--
21N47E31CACC	055	50	6	P	G	S	2580	14.30	SR	08/15/1975	5 V	08/15/1975
21N47E31CCCC	055	47	4	--	--	U	2580	12.10	S	08/15/1975	--	--
21N47E36ABBC	055	140	4	--	--	U	2480	6.60	S	02/11/1976	--	--
21N48E02ADDD	055	28	36	P	H	U	2460	17.90	S	09/16/1975	--	--
21N48E09BACA	055	53	4	P	E	S	2550	22.60	SR	09/17/1975	--	--
21N48E10BDDD	055	50	4	P	E	S	2480	19.60	SR	09/17/1975	5 V	09/17/1975
21N48E10DDDC	055	17	5	P	H	S	2480	8.10	SR	09/17/1975	3 V	09/17/1975
21N48E10DDDC2	055	70	6	J	E	H	2480	8.00	SR	09/16/1975	--	--
21N48E12BBCB	055	260	6	S	E	H	2500	91.60	SR	09/19/1975	--	--
21N48E15ADBD	055	72	4	P	E	S	2500	25.10	SR	09/17/1975	4 V	09/17/1975
21N48E22BCAC	055	35	24	P	G	H,S	2500	10.00	RR	09/18/1975	3 V	09/18/1975
21N48E22DDAb	055	18	36	P	H	U	2480	10.70	S	09/19/1975	--	--
21N48E25bABB	055	108	4	P	E	H,S	2520	98.60	SR	09/18/1975	3 V	09/18/1975
21N48E26BBBC	055	50	4	J	E	H	2460	13.10	SR	09/20/1975	--	--
21N48E26BBCC	055	75	4	J	E	H	2500	14.00	RR	09/16/1975	4 V	01/28/1971
21N48E26BBCD	055	24	24	J	E	S	2480	18.00	RR	09/16/1975	--	--
21N48E27BDCC	055	162	4	P	W	S	2560	80.00	RR	09/17/1975	5 V	04/10/1975
21N48E30CDAA	055	160	5	S	E	H	2600	95.60	SR	09/.9/1975	6 R	09/19/1975
21N48E31DACB	055	54	5.5	S	E	S	2480	26.50	SR	09/12/1975	4 V	09/12/1975
21N49E06ABBA	055	35	6	J	E	H	2380	30.20	SR	09/19/1975	10 V	09/19/1975
21N49E06BAAA	055	28	4	P	E	S	2380	12.90	SR	09/17/1975	--	--
21N49E06BAAA2	055	22	6	J	E	H	2380	18.50	SR	09/17/1975	--	--
21N49E19CCCD	055	26	4	P	E	S	2440	3.70	SR	09/18/1975	--	--
21N49E20CCBA	055	76	6	S	E	S	2440	21.60	SR	09/18/1975	--	--
21N49E20CCBC	055	53	6	P	H	U	2440	31.80	S	09/18/1975	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-EJER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
21N49E20CCBC2	055	110	6	P	E	H	2440	91.20	SR	09/22/1975	--	--
21N49E32AABC	055	45	36	P	G	S	2440	19.00	SR	09/16/1975	--	--
21N50E10DAAA	021	48	4	P	E	S	2380	23.00	SR	09/26/1975	4	V 09/26/1975
21N50E10DAAC	021	110	4	S	E	H	2380	30.00	RR	09/26/1975	--	--
21N50E10DAAC2	021	49	4	--	--	U	--	25.30	S	09/26/1975	--	--
21N50E13DCBC	021	30	4	P	G	S	2380	12.50	SR	09/12/1975	--	--
21N50E15ACAD	021	109	4	P	E	S	2480	83.50	SR	09/22/1975	--	--
21N50E23CDDC	021	163	4	P	G	S	2500	119.10	SR	09/22/1975	--	--
21N50E23DDDC	021	110	4	--	--	U	2440	34.80	S	09/22/1975	--	--
21N50E25CCDA	021	61	4	J	E	H	2460	15.80	SR	09/22/1975	--	--
21N50E25CCDA2	021	60	4	--	--	U	2480	12.90	S	09/22/1975	--	--
21N50E25CCDD	021	22	24	P	E	S	2480	14.30	SR	09/22/1975	--	--
21N50E36ABBB	021	44	4	P	E	S	2460	37.80	SR	09/25/1975	3	V 09/25/1975
21N51E10AABD	021	131	6	--	--	U	2380	15.10	S	09/23/1975	--	--
21N51E10ABBC	021	100	4	P	E	S	2380	20.00	RP	09/23/1975	2	V 09/23/1975
21N51E14BABD	021	60	4	P	E	S	2400	13.70	SR	09/23/1975	3	V 09/23/1975
21N51E14BABD2	021	80	6	S	E	H	2400	30.00	RR	09/24/1975	--	--
21N51E14BABD3	021	42	18	P	E	S	2400	28.40	SR	09/23/1975	3	V 09/23/1975
21N51E14CBBB	021	138	4	S	E	S	2440	50.00	RP	--	--	--
21N51E18BAAB	021	100	4	S	E	H	2420	62.30	SR	09/23/1975	--	--
21N51E19ABBB	021	45	6	--	--	U	2480	36.00	S	09/24/1975	--	--
21N51E19BABC	021	13	24	P	G	S	2440	3.60	SR	09/24/1975	--	--
21N52E05AAAB	021	71	5	P	E	S	--	58.80	SP	10/03/1975	--	--
21N52E05ACCC	021	39	4	--	--	--	--	23.40	V	10/03/1975	--	--
21N52E05CAAA	021	14	50	P	E	S	2500	6.70	VR	10/03/1975	--	--
21N52E17DA	021	38	32	P	E	H	2500	22.30	SR	09/08/1976	8	V 09/08/1976
21N52E17DB	021	53	5.5	P	G	S	2450	14.00	SR	09/08/1976	6	V 09/08/1976
21N52E23ADC	021	66	3.5	--	--	S	--	58.70	SR	09/01/1976	5	V 09/01/1976
21N52E28DC	021	67	5	S	E	S	2620	19.40	SR	09/08/1976	15	E 09/08/1976
21N52E32DA	021	99	18	P	E	S	2650	61.40	SR	09/08/1976	3	V 09/08/1976
21N52E33DB	021	70	--	P	W	U	2600	61.20	S	09/11/1976	--	--
21N53E01DCCB	021	65	18	J	G	H	2890	34.00	SP	09/01/1976	6	R 09/01/1976
21N53E06CAAA	021	103	5	S	E	H	2610	53.30	SR	09/01/1976	8	V 09/01/1976
21N53E08ADCC	021	70	4	--	--	U	2703	26.60	S	10/08/1975	3	V 05/04/1976
21N53E08CCBB	021	53	16	P	H	U	2755	38.60	S	09/11/1976	--	--
21N53E10BBAD	021	77	4	P	W	S	2770	27.70	SR	09/01/1976	--	--
21N53E21CAAB	021	93	30	P	W	U	2950	46.40	S	09/01/1976	--	--
21N53E22DAAB	021	128	6	S	E	H	2870	73.20	SP	09/01/1976	8	V 09/01/1976
21N54E04BCCB	021	346	4	S	E	S	2630	174.10	SR	09/11/1976	4	V 09/11/1976
21N54E08CDDD	021	42	4	S	E	S	2810	19.90	SR	09/14/1976	3	V 09/14/1976

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
21N54E12ACCC	021	238	6	P	W	S	2567	30.00	RP	--	2 V	09/14/1976
21N54E14CACB	021	35	4	P	W	S	2650	22.30	SP	09/09/1976	3 V	09/09/1976
21N54E22CBDD	021	85	6	S	E	H	2790	49.60	SR	09/10/1976	12 V	09/10/1976
21N54E33DCAC	021	103	4	S	E	H	2670	30.80	SP	09/10/1976	30 V	09/10/1976
21N55E02AADA	021	101	16	P	E	H	2730	49.30	SR	09/09/1976	15 V	09/09/1976
21N55E03BABC	021	110	24	P	E	U	2745	53.70	S	09/13/1976	--	--
21N55E06BAAA	021	50	24	P	G	U	2429	26.20	S	09/13/1976	--	--
21N55E11ADAC	021	124	4	--	--	U	2705	45.00	S	09/09/1976	--	--
21N55E14ABAD	021	406	4	S	E	U	2510	262.70	SR	09/10/1976	12 V	09/10/1976
21N55E32ACDD	021	120	4	--	--	U	2750	33.40	S	09/09/1976	--	--
21N56E10BDBA	083	169	6	P	E	S	2620	155.40	SR	09/13/1976	4 V	09/13/1976
21N56E20CABC	083	90	4	P	W	U	2700	83.30	S	09/13/1976	--	--
21N56E21DBAD	083	25	4	P	G	S	--	22.30	SR	09/09/1976	--	--
21N56E24BADC	083	323	4	P	E	S	2521	250.00	SR	09/06/1976	12 V	09/06/1976
21N56E26BAAC	083	90	4	J	E	H	2520	38.60	SR	09/13/1976	10 V	09/13/1976
21N56E28ADDC	083	220	2	--	--	U	2515	50.60	S	05/04/1976	--	--
21N57E10CDDD	083	214	6	S	E	H,S	2320	117.10	SR	08/13/1976	11 V	09/13/1976
21N57E13ACDC	083	60	36	S	E	S	2139	25.30	SR	09/13/1976	11 V	09/13/1976
21N57E14CDCC	083	85	4	S	E	H,S	--	20.60	SR	09/06/1976	9 V	09/06/1976
21N57E16DCCB	083	133	6	--	--	U	2340	55.80	S	09/13/1976	--	--
21N57E19AAAA	083	163	6	S	E	H,S	2426	144.90	SR	09/07/1976	10 V	09/07/1976
21N57E31DDCD	083	65	36	P	E	S	2330	46.20	SR	09/ /1976	4 V	09/07/1976
21N57E36CDCC	083	249	6	P	G	S	2220	172.60	SR	09/13/1976	6 V	09/13/1976
21N58E03CBBC	083	1240	--	--	--	S	2010		F	09/09/1976	15 R	04/17/1972
21N58E03DBB	083	1240	6.6	--	--	S	2040	50.60+	R	08/01/1972	0.3 VF	08/13/1975
21N58E06ABBC	083	214	4	P	E	S	2150	87.40	SR	09/14/1976	--	--
21N58E08DDAD	083	40	4	S	E	H	2000	19.00	SR	09/13/1976	6 V	09/13/1976
21N58E30DDA	083	830	4	--	--	S	2045	49.45+	R	08/10/1966	--	--
21N58E31ADDD	083	47	4	S	E	H	1982	7.30	SR	09/13/1976	--	--
21N59E08BCD	083	1270	6	--	--	S,H	1975	119.60+	G	08/12/1975	12 V F	08/12/1975
21N59E13CDC	083	1368	4	--	--	S	2080	69.00+	R	02/14/1970	12 V F	08/12/1975
21N59E14BCA	083	1330	4	--	--	S,H	2065	124.20+	R	05/01/1969	8 V F	08/12/1975
21N59E15DDBA	083	132	4	--	--	S	2104	74.30	SR	09/13/1976	--	--
21N59E20AAAC	083	125	4.5	P	W	S	2020	92.80	S	09/15/1976	--	--
21N59E22DDC	083	306	4	--	--	S	2300	165.00	R	02/05/1968	--	--
21N59E23DBAA	083	--	--	S	E	S	2140	178.80	SR	09/15/1976	0.8 V	09/15/1976
21N59E30B8CA	083	194	6	J	E	H	1980	53.20	SR	09/15/1976	4 V	09/15/1976
21N59E33DBB8	083	1300	5	--	--	S	2100		F	09/13/1976	12 R F	09/13/1976
21N59E35CCAA	083	450	4	S	E	S	2320	309.30	SP	09/13/1976	10 V	09/13/1976
21N60E18DCBC	083	--	--	S	E	S	2230	170.60	SR	09/25/1976	4 V	09/25/1976

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
21N60E29BABA	083	--	--	S	E	S	2280	199.60	SR	09/15/1976	4 V	09/15/1976
22N42E05DB	033	125	4	--	--	S	2350	78.00	SP	08/31/1976	12 V	08/31/1976
22N42E34CC	033	210	4	J	E	S	2300	24.50	SR	08/31/1976	15 V	08/31/1976
22N43E03ACAD	055	138	--	S	E	S	2350	112.60	SP	08/31/1976	12 V	08/31/1976
22N44E23DDBC	055	37	6	P	E	U	2540	11.00	S	08/07/1975	5 V	08/07/1975
22N44E35BAAA	055	28	4	--	--	U	2480	19.10	S	08/07/1975	--	--
22N44E35BACB	055	15	--	P	H	U	2480	13.30	V	08/07/1975	--	--
22N44E35BACB2	055	19	5	P	H	U	2480	13.80	S	08/07/1975	6 V	08/07/1975
22N44E36CBBB	055	120	6	S	E	U	2520	78.40	S	08/07/1975	--	--
22N45E22DDBB	055	311	5	--	--	U	2600	38.90	V	09/03/1975	--	--
22N45E24ADDB	055	113	5	S	E	S	2400	107.30	SR	08/08/1975	--	--
22N45E24ADDB2	055	115	5	--	--	S	--	104.20	S	08/08/1975	--	--
22N45E25ADCB	055	116	5	S	E	S	2459	100.50	SR	08/08/1975	4 V	08/08/1975
22N45E26DBDD	055	150	6	S	E	H	2450	76.40	SP	08/08/1975	--	--
22N45E27AADB	055	151	4	S	E	S	2540	75.80	SR	09/03/1975	6 R	12/10/1965
22N45E30BADC	055	150	4	P	W	S	2640	97.70	SP	09/03/1975	2 V	09/03/1975
22N45E31BBDB	055	269	4	S	E	S	2660	231.80	SR	09/08/1965	--	--
22N45E33DCBB	055	120	4	--	--	U	2500	69.50	V	09/03/1975	--	--
22N45E33DCBD	055	113	4	--	--	U	2505	71.30	S	09/03/1975	--	--
22N45E33DCBD2	055	150	4	S	E	S	2505	69.80	SR	09/03/1975	6 V	09/03/1975
22N46E07ABBD	055	214	6	P	E	S	2360	78.60	SR	09/04/1975	6 V	09/04/1975
22N46E18ADAA	055	168	4	P	G	S	2400	74.60	SR	09/04/1975	--	--
22N46E22DDBC	055	--	--	--	--	--	2600	37.40	S	08/07/1975	--	--
22N46E24BAAC	055	169	7	P	W	S	2680	155.70	SR	08/14/1975	--	--
22N46E27DDAB	055	170	5	P	E	S	2540	123.60	SR	09/05/1975	--	--
22N46E33DBBD	055	210	4	S	E	S,H	2487	31.60	SR	09/05/1975	7 V	09/05/1975
22N47E01ACAD	055	82	4	P	W	S	2540	40.00	RR	09/11/1975	3 V	09/11/1975
22N47E03BAAA	055	40	16	--	--	U	2480	16.30	V	09/10/1975	--	--
22N47E14BCCD	055	54	5	P	W	S	2580	27.20	SR	09/11/1975	--	--
22N47E19ABBD	055	75	24	P	W	S	2580	20.40	SR	08/13/1975	--	--
22N47E21CDCC	055	20	18	P	G	S	2580	6.90	SR	08/13/1975	--	--
22N47E21CDCC2	055	70	5	P	G	S	2580	21.80	SR	08/13/1975	5 V	08/13/1975
22N47E22BBBC	055	--	4	--	--	--	2560	--		--	--	--
22N47E23DDBC	055	90	5	P	W	U	2520	24.10	S	09/11/1975	--	--
22N47E26ADAD	055	90	6	S	E	H	2560	48.60	SR	09/10/1975	--	--
22N47E26DAAA	055	40	6	P	H	U	2560	20.40	S	09/10/1975	--	--
22N47E28CADD	055	80	6	P	H	U	2580	25.20	V	09/11/1975	--	--
22N47E36BACB	055	15	36	P	G	S	2540	6.20	VR	09/10/1975	--	--
22N48E05CCBB	055	1215	6	--	--	U	2550	380.00	R	--	--	--
22N48E06ABBC	055	48	4	J	E	S	2440	27.30	SR	09/16/1975	3 V	09/16/1975

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
22N48E10DDDB	055	76	6	S	E	H	2400	19.30	SR	09/16/1975	--	--
22N48E15BCCA	055	44	5	P	G	S	2480	16.40	SR	09/16/1975	--	--
22N48E17DDCA	055	154	4	P	W	S	2600	60.10	SR	09/16/1975	--	--
22N48E18BCAD	055	116	3	--	--	U	2560	52.10	V	09/17/1975	--	--
22N48E25BDBC	055	1258	4	--	--	U	2550	207.00	R	--	--	--
22N48E26CDAA	055	48	5	J	E	H	2440	43.70	SR	09/16/1975	--	--
22N48E33BABD	055	1258	4	--	--	U	2500	360.00	R	--	--	--
22N48E34DDDC	055	51	4	S	E	S	2460	42.10	VR	09/16/1975	--	--
22N49E06CABA	055	76	4	J	E	S	2380	1.00	SR	09/18/1975	--	--
22N49E08ADDC	055	42	6	S	E	H	2320	7.60	VR	09/19/1975	5 V	09/19/1975
22N49E08BDDD	055	48	5	P	E	S	2320	6.10	SR	09/18/1975	--	--
22N49E18BCCB	055	212	5	S	E	H,S	2360	71.20	SR	09/22/1975	--	--
22N49E20AACC	055	40	4	P	H	S	2380	3.70	SR	09/18/1975	--	--
22N49E21CABD	055	75	5	P	W	S	2380	59.10	VP	09/19/1975	--	--
22N49E28BCCB	055	212	5	P	G	S	2500	196.60	SR	09/18/1975	--	--
22N49E29CCDC	055	70	6	P	E	S	2400	0.70	SP	09/18/1975	--	--
22N49E30ACCC	055	86	4	S	E	H,S	2500	65.40	SR	09/18/1975	--	--
22N49E33CCCD	055	36	5	--	--	U	2380	24.20	V	09/18/1975	--	--
22N50E06BCAC	021	91	4	P	W	S	2380	75.80	SR	09/22/1975	--	--
22N50E08ADBB	021	206	5	P	E	S	2420	126.80	SR	09/22/1975	--	--
22N50E13BADB	021	152	4	P	G	S	2300	105.80	SR	09/24/1975	--	--
22N50E20DADC	021	94	4	P	H	S	2260	36.70	SR	09/22/1975	--	--
22N50E22ACAD	021	49	5	--	--	U	2220	19.50	V	09/23/1975	--	--
22N50E24BABA	021	130	4	P	G	S	2360	94.60	SR	09/24/1975	--	--
22N50E29CCCA	021	50	6	S	E	H	2280	18.00	RR	09/17/1975	--	--
22N50E29CCCB	021	22	18	S	E	H	2280	18.00	RR	09/17/1975	--	--
22N50E29CCCC	021	20	5	S	E	S	2280	18.00	RR	09/17/1975	--	--
22N50E29CCDB	021	25	6	S	E	S	2280	18.00	RR	09/17/1975	7 R	1968
22N50E35AAAD	021	56	5	P	E	S	2320	40.20	SP	09/22/1975	--	--
22N51E01ADDA	021	40	5	P	W	S	2480	19.30	SR	09/24/1975	--	--
22N51E02CBBB	021	140	4	P	E	H	2480	53.40	SR	09/23/1975	--	--
22N51E02CBBC	021	170	5	S	E	H,S	2500	80.60	SR	09/24/1975	--	--
22N51E03BAAA	021	85	4	P	E	S	2480	40.20	SR	10/24/1975	--	--
22N51E05ADDD	021	149	4	P	G	S	2480	60.10	SR	09/24/1975	--	--
22N51E07CCDD	021	79	5	S	E	H,S	2280	49.10	SR	09/24/1975	--	--
22N51E10ADDA	021	111	4	S	E	H	2400	108.70	SR	09/24/1975	7 V	09/24/1975
22N51E10ADDD	021	53	4	P	E	S	2380	35.80	SR	09/24/1975	--	--
22N51E11BCCA	021	190	5	S	E	H,S	2380	95.00	RR	09/24/1975	--	--
22N51E11BCCA2	021	280	5	S	E	H	2380	103.00	SR	09/24/1975	--	--
22N51E19CBBB	021	182	5	P	H	S	2400	36.90	SR	09/25/1975	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
22N51E22DBAD	021	74	4	P	H	U	2350	38.20	S	09/23/1975	--	--
22N51E23DDCB	021	55	5	S	E	S	2450	40.00	RP	10/06/1975	--	--
22N51E26ABAD	021	55	5	P	G	S	2400	30.00	RR	10/06/1975	--	--
22N51E27BAAB	021	69	4	P	H	U	2320	49.80	S	09/23/1975	--	--
22N51E27BABD	021	50	5	S	E	S	2300	22.80	SR	09/22/1975	--	--
22N51E28BAAA	021	99	4	P	H	S	2400	83.90	SR	09/25/1975	--	--
22N52E01BDBD	021	80	4	--	--	U	2500	3.20	V	09/30/1975	--	--
22N52E04CABD	021	30	18	P	E	S	2440	2.20	SR	10/04/1975	--	--
22N52E06BACA	021	106	18	P	G	S	2400	41.00	SR	10/23/1975	--	--
22N52E14BACD	021	85	16	P	W	S,H	2480	20.00	RR	09/30/1975	--	--
22N52E17BACC	021	91	4	--	--	U	2600	49.10	S	10/06/1975	--	--
22N52E20DC	021	1225	2	--	--	P	2473	315.00	R	08/14/1970	--	--
22N52E24DADD	021	98	4	S	E	S	2643	81.60	SR	09/30/1975	--	--
22N52E25CBCA	021	153	4	P	E	H,S	2516	50.30	SR	10/10/1975	3 V	10/10/1975
22N52E28B	021	1183	5.2	--	--	P	2495	325.00	R	--	--	--
22N52E30ABBD	021	120	6	S	E	S	2500	35.70	SR	09/30/1975	--	--
22N52E30ABBD2	021	52	6	--	--	S	2500	30.00	RR	09/30/1975	--	--
22N52E30ADDC	021	139	12	--	--	U	2480	25.70	V	09/30/1975	--	--
22N52E30DCCD	021	60	6	P	E	H,S	2480	20.50	SR	09/30/1975	4 V	09/30/1975
22N52E33ABBA	021	114	5	P	E	S	2580	69.90	SP	10/03/1975	--	--
22N53E05CDAA	083	176	4	S	E	S	2477	106.90	SR	10/08/1975	--	--
22N53E10ABBD	083	58	4	P	E	S	2459	45.90	SR	10/10/1975	--	--
22N53E16ACCC	083	130	4	--	--	S	2519	81.40	SR	10/06/1975	--	--
22N53E18BCAB	083	96	5	P	G	S	2480	72.90	SR	10/08/1975	--	--
22N53E22BDCB	083	196	5	P	W	S	2576	123.70	SP	10/08/1975	5 V	10/08/1975
22N53E23ABBD	083	109	4	P	W	--	2553	75.70	SP	10/06/1975	--	--
22N53E26HAAA	083	201	5	S	E	S	2682	187.70	SR	10/06/1975	--	--
22N53E29BDBD	083	199	5	S	E	S	2620	127.90	SR	10/10/1975	--	--
22N53E30ABBB	083	101	4	P	E	S	2576	78.40	SR	10/10/1975	--	--
22N53E35CCCD	083	191	6	P	W	S	2680	134.70	SR	10/07/1975	--	--
22N54E06DABD	083	240	6	P	E	S	2365	26.10	SR	09/08/1976	3 V	09/08/1976
22N54E10CCCA	083	101	24	P	E	S	2500	71.00	SR	09/11/1976	3 V	09/11/1976
22N54E18ACBC	083	121	4	P	G	U	2510	84.20	S	09/08/1976	--	--
22N54E21CBBD	085	320	4	S	E	S	2690	258.90	SP	09/11/1976	12 V	09/11/1976
22N54E22ABCB	085	190	4	S	E	S	2610	153.20	SR	09/11/1976	3 V	09/11/1976
22N54E32BAAC	083	230	4	S	E	S	2670	189.10	SP	09/14/1976	12 V	09/14/1976
22N55E01AACA	083	90	6	--	--	S	2345	4.50	SR	09/08/1976	--	--
22N55E07ABCD	083	38	4	--	--	U	2370	3.00	S	09/10/1976	--	--
22N55E23ADBD	083	56	6	S	E	S	2374	23.50	SR	09/09/1976	4 V	09/09/1976
22N55E26AD	083	90	16	P	W	U	2450	28.10	S	09/09/1976	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
22N55E31DBDD	085	103	6	P	E	S	2415	14.10	SR	09/13/1976	3 V	09/13/1976
22N55E32ABDB	083	140	4	S	E	S	2470	106.30	SR	09/13/1976	12 V	09/13/1976
22N56E02DBBB	083	95	6	P	H	S	2660	64.80	SR	09/11/1976	2 V	09/11/1976
22N56E05BCAC	083	160	4	P	E	S	2377	35.60	SR	09/08/1976	--	--
22N56E12CADC	083	36	6	--	--	S	2480	19.40	S	09/08/1976	--	--
22N56E15BDCC	083	150	4	P	G	S	2420	102.80	SR	09/11/1976	4 V	09/11/1976
22N56E22CADA	083	30	36	P	E	S	2300	9.30	SR	09/09/1976	--	--
22N56E33CCCC	083	40	6	P	E	S	2685	12.50	SR	09/08/1976	--	--
22N57E07CADA	083	76	6	P	W	S	2405	3.70	SR	09/08/1976	--	--
22N57E17ACCB	083	68	6	P	G	S	2364	20.70	SR	09/08/1976	3 V	09/08/1976
22N57E20BDCC	083	160	6	P	G	S	2440	137.00	SR	09/08/1976	4 V	09/08/1976
22N57E21DCBC	083	113	6	P	W	S	2358	74.00	SR	09/02/1976	--	--
22N57E27CDBD	083	400	6	S	E	S	2360	161.60	SR	09/02/1976	10 V	09/ /1976
22N58E03CDBD	083	60	36	P	E	S	2362	52.90	SR	09/02/1976	--	--
22N58E06BABD	083	90	6	S	E	H	2290	44.50	SR	09/11/1976	10 V	09/11/1976
22N58E07DCCD	083	140	4	S	E	H,S	2290	98.80	SR	09/03/1967	--	--
22N58E09BABB	083	167	4	S	E	H	2280	116.90	SR	09/16/1976	10 R	03/21/1976
22N58E10CCCC	083	135	8	S	E	--	2180	51.40	SR	09/11/1976	7 R	09/11/1976
22N58E12DCC	083	1140	5	--	--	S	1975	92.00+	R	04/12/1972	--	--
22N58E17BBBB	083	29	16	S	E	C	1940	9.80	SR	09/14/1976	--	--
22N58E19BDCB	083	30	6	S	E	S	2116	9.00	SR	09/02/1976	6 V	09/02/1976
22N58E36ABAB	083	28	4	S	E	S	1928	15.70	SR	09/15/1976	6 V	09/15/1976
22N58E36DDD	083	1120	5	--	--	S,H	1915	193.20+	R	08/03/1971	--	--
22N59E06ABBB	083	29	4	S	E	H	1970	19.60	SR	09/15/1976	6 V	09/15/1976
22N59E13CCBB	083	410	4	S	E	S	2082	179.30	SR	09/11/1976	5 V	09/11/1976
22N59E15DCBC	083	85	6	P	E	S	1950	55.10	SR	09/09/1976	6 V	09/09/1976
22N59E24CBBD	083	1300	4	--	--	S	2040		F	--	--	--
22N59E28BCC	083	1172	4	--	--	S,H	1960	195.50+	R	12/19/1970	--	--
22N60E07CCDB	083	148	4	P	E	S	1940	26.40	SR	09/09/1976	4 V	09/09/1976
23N50E04BABA	021	60	12	--	--	U	2360	37.00	V	09/30/1975	--	--
23N50E04BABB	021	95	6	P	E	S,H	2360	45.00	RR	09/30/1975	--	--
23N50E04DBCD	021	120	4	P	E	S	2420	85.00	SR	10/01/1975	--	--
23N50E04DCBA	021	96	5	--	--	U	2420	70.60	S	10/01/1975	--	--
23N50E06DBDD	021	1000	5.5	--	--	U	2450	85.30	S	09/29/1976	--	--
23N50E10BBBA	021	90	12	--	--	U	2400	32.10	S	10/01/1975	--	--
23N50E12BCAA	021	103	4	J	E	H	2200	31.70	SR	09/29/1975	--	--
23N50E12BCAD	021	99	4	S	E	S	2200	36.70	SR	09/29/1975	--	--
23N50E14CABB	021	56	7	P	E	S	2280	14.10	SR	09/23/1975	--	--
23N50E14CACB	021	39	5	J	E	S	2280	15.90	SR	09/25/1975	10 V	09/25/1975
23N50E14CACC	021	26	7	--	--	U	2280	17.50	V	09/25/1975	4 V	09/25/1975

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
23N50E14CBDA	021	67	4	P	H	S	2280	37.20	SR	09/25/1975	--	--
23N50E19BBB	021	1156	--	--	--	U	2495	--		--	--	--
23N50E19DCC	021	1096	--	--	--	U	2490	325.00	R	05/10/1952	--	--
23N50E22CBCD	021	119	4	S	E	S	2380	92.10	SR	09/25/1975	--	--
23N50E24DDCD	021	36	4	J	E	S	2180	15.80	SR	09/29/1975	--	--
23N50E26ACAD	021	36	4	J	E	S	2260	13.80	SR	09/29/1975	--	--
23N50E27ADAD	021	66	6	P	E	S	2320	50.30	SR	09/25/1975	--	--
23N50E30BBAB	021	108	5	P	G	S	2420	49.10	SR	09/29/1975	--	--
23N50E34DBBC	021	100	4	P	E	S	2320	94.30	SR	09/29/1975	--	--
23N50E35CCAC	021	20	6	P	E	S,H	2200	8.00	SR	09/29/1975	--	--
23N51E04ABBB	083	40	24	S	E	H	2220	35.00	RR	10/23/1975	4 V	10/27/1975
23N51E04ABBC	083	40	24	C	E	S	2220	35.00	RR	10/27/1975	--	--
23N51E04ABBC2	083	40	24	P	E	S	2220	35.00	RR	10/27/1975	--	--
23N51E12ADCC	083	39	4	--	--	U	2280	15.60	V	10/21/1975	--	--
23N51E13ABAB	083	135	4	P	W	S	2380	34.00	RR	10/21/1975	3 V	10/21/1975
23N51E14CCCB	083	39	8.5	P	G	S	2400	7.70	SR	10/23/1975	--	--
23N51E14DDAD	083	120	4	S	E	S	2280	36.00	RR	10/21/1975	--	--
23N51E20BBBB	083	175	6	S	E	S	2360	27.00	SR	10/24/1975	--	--
23N51E20BBBC	083	42	6	S	E	S	2360	24.60	SR	10/24/1975	--	--
23N51E22CBAC	083	120	4	S	E	H	2380	75.00	RR	10/28/1975	--	--
23N51E22CBDB	083	60	18	J	E	S	2380	6.00	RR	10/28/1975	--	--
23N51E23ACAD	083	17	18	P	E	S	2300	6.40	VR	10/23/1975	--	--
23N51E26BDBB	083	127	4	P	G	S	2420	37.20	SR	10/21/1975	--	--
23N51E34DDCA	083	88	5	P	E	S,H	2500	44.20	SR	10/21/1975	--	--
23N52E07CDCA	083	43	4	P	E	S	2280	13.40	VP	10/21/1975	--	--
23N52E07CDDB	083	42	18	P	E	S	2280	12.30	VR	10/21/1975	--	--
23N52E09BCAB	083	41	36	P	E	S	2380	33.40	VR	10/27/1975	--	--
23N52E14DCCD	083	110	5	P	H	S	2500	51.80	SR	10/17/1975	--	--
23N52E15DDCA	083	136	4	P	E	S	2460	104.80	SR	10/17/1975	--	--
23N52E16CBCD	083	25	24	P	E	S	2340	8.40	VR	10/17/1975	--	--
23N52E18BDAC	083	88	4	P	E	S	2380	38.10	SR	10/21/1975	--	--
23N52E18BDBA	083	190	6	S	E	H	2380	100.00	RR	10/21/1975	5 V	10/21/1975
23N52E20DABD	083	72	24	S	E	--	2400	29.00	RR	10/20/1975	--	--
23N52E22BDDC	083	11	24	P	E	S	2360	2.20	SR	10/23/1975	3 V	10/23/1975
23N52E24BCBB	083	150	5	P	E	S	2500	40.60	SP	10/23/1975	--	--
23N52E27BBAD	083	69	4	P	E	S	2380	38.30	SP	10/23/1975	--	--
23N52E28AA	083	315	4	S	E	H,S	2450	95.00	R	08/06/1973	6 B	08/06/1978
23N52E28AAAC	083	370	4	S	E	H,S	2420	176.00	RR	10/17/1975	--	--
23N52E29CDDC	083	109	4	--	--	U	2460	58.10	S	10/17/1975	--	--
23N52E32DCDA	083	35	4	S	E	H	2380	30.40	SR	10/17/1975	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
23N52E32DCDB	083	30	24	P	E	S	2380	11.20	VR	10/17/1975	5 V	10/17/1975
23N52E34AADD	083	120	4	P	W	S	2440	93.00	RP	10/17/1975	--	--
23N53E01ABAA	083	20	20	P	G	S	2380	4.40	SR	10/20/1975	--	--
23N53E10DDDB	083	78	6	P	E	S	2360	23.10	SR	10/16/1975	--	--
23N53E13DDCC	083	40	18	P	G	S	2480	20.00	RR	10/16/1975	--	--
23N53E14BAA	083	177	4	--	--	S,H	--	65.00	R	03/15/1963	--	--
23N53E14BAAB	083	177	5	S	E	H	2380	68.50	SR	10/16/1975	7 V	10/16/1975
23N53E14BABD	083	43	20	--	--	U	2380	8.70	V	10/16/1975	--	--
23N53E14BADA	083	78	5	--	--	U	2380	36.00	V	10/16/1975	--	--
23N53E14BADD	083	14	36	--	--	U	2380	3.80	V	10/16/1975	--	--
23N53E14BBAD	083	24	4	S	E	H	2380	10.00	RR	10/16/1975	--	--
23N53E14BBDA	083	325	6	S	E	H	2400	100.00	RR	10/16/1975	--	--
23N53E18ACCD	083	46	18	P	E	S,H	2360	32.30	SR	10/17/1975	--	--
23N53E26CAAC	083	42	4	P	G	S	2336	24.70	SR	10/16/1975	--	--
23N53E27BBDA	083	26	4	P	E	S	2400	21.70	SR	10/16/1975	--	--
23N53E27BBDB	083	40	24	S	E	H,S	2419	22.10	SR	10/16/1975	--	--
23N53E28BABB	083	75	4	S	E	S	2360	60.00	RR	10/16/1975	--	--
23N53E30DCAA	083	139	6	S	E	S	2500	132.80	SR	10/08/1975	--	--
23N53E31ABCA	083	73	4	--	--	U	2520	24.10	S	10/08/1975	--	--
23N53E32CCBD	083	126	6	J	E	H,S	2380	41.60	SP	10/08/1975	--	--
23N54E07ABAB	083	100	6	P	E	S	2400	50.40	SR	10/20/1975	--	--
23N54E08ACDB	083	100	5	P	E	S	2480	74.20	SP	10/20/1975	--	--
23N54E18ADBC	083	196	4	S	E	H,S	2500	179.60	SR	10/17/1975	--	--
23N54E18ADDA	083	51	36	P	E	S	2500	38.30	VP	10/17/1975	5 V	10/17/1975
23N54E18CADC	083	200	4	S	E	S	2480	102.00	SR	10/10/1975	--	--
23N54E18CDBD	083	200	4	S	E	H	2480	110.00	RR	10/10/1975	--	--
23N54E19BACD	083	100	22	--	--	U	2480	56.90	V	10/10/1975	--	--
23N54E20BCDD	083	91	24	P	E	S	2505	78.80	VR	10/14/1975	--	--
23N54E32CABB	083	66	5	P	E	S	2420	40.40	SR	10/10/1975	--	--
24N51E24DDAB	083	40	24	J	E	H	2360	25.00	RR	10/08/1975	--	--
24N52E18CABB	083	20	24	J	E	S	2280	18.30	SR	10/10/1975	4 R	1951
24N52E22CBBD	083	90	4	J	E	H	2300	46.00	RR	--	--	--
24N52E22CBCA	083	72	16	--	--	U	2300	40.10	S	10/07/1975	--	--
24N52E22DCDD	083	30	36	--	--	U	2320	10.00	R	10/07/1975	--	--
24N52E28BBAD	083	33	6	P	E	S	2340	10.40	SR	10/07/1975	4 V	10/07/1975
24N52E28CAAB	083	20	30	P	E	U	2340	11.30	S	10/13/1975	--	--
24N52E29ABBA	083	37	24	P	G	S	2400	27.20	VR	10/08/1975	5 V	10/08/1975
24N52E33BBCA	083	37	36	--	--	U	2500	17.90	S	10/07/1975	--	--
24N53E01DACD	083	42	36	J	E	--	2360	14.00	RR	10/20/1975	--	--
24N53E01DACD2	083	50	36	P	E	S	2360	29.00	VR	10/20/1975	--	--

Table 1.--Records of wells--Continued

LOCAL NUMBER	COUNTY	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	TYPE OF LIFT	TYPE OF POWER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DATE DISCHARGE MEASURED
24N53E03CBCB	083	75	24	P	G	S	2400	27.00	VR	10/22/1975	--	--
24N53E09ABBB	083	29	24	P	G	S	2380	8.40	SR	10/25/1975	--	--
24N53E12ABBC	083	70	4	P	E	S	2380	35.00	RR	10/21/1975	--	--
24N53E13BCCC	083	57	6	P	W	U	2380	33.40	S	10/09/1975	6 R	11/29/1962
24N53E14CBAA	083	52	16	--	--	U	2360	15.00	R	07/15/1961	--	--
24N53E14CBAA2	083	216	5	S	E	H	2360	35.00	RR	10/09/1975	--	--
24N53E14DBBA	083	87	6	P	W	U	2380	28.50	S	10/09/1975	--	--
24N53E15CCCD	083	30	18	P	W	S	2300	13.90	SR	10/13/1975	--	--
24N53E24DDCB	083	40	18	P	E	S	2340	16.90	SR	10/13/1975	--	--
24N53E24DDCB2	083	60	4	S	E	S	2340	40.00	RR	--	--	--
24N53E25BCBB	083	40	18	P	E	S	2340	15.10	SR	10/23/1960	10 R	10/23/1960
24N53E25DADD	083	160	6	S	E	H,S	2360	80.00	R	07/10/1954	10 V	07/10/1954
24N53E33BDAD	083	196	6	--	--	U	2400	152.50	S	10/13/1975	--	--
24N53E34AAAB	083	50	18	--	--	U	2360	27.80	S	10/13/1975	--	--
24N54E08BAAA	083	63	4	P	E	S	2320	27.00	SR	10/13/1975	--	--
24N54E09CDDD	083	40	48	P	G	S	2380	11.20	SR	10/24/1975	5 V	10/24/1975
24N54E16CCCD	083	40	18	P	E	S	2480	29.80	SR	10/23/1975	--	--
24N54E19DAAB	083	74	48	--	--	U	2380	39.40	S	10/24/1975	--	--
24N54E20BCDD	083	64	36	--	--	U	2420	60.80	S	10/25/1957	--	--
24N54E21DB	083	485	4	S	E	S,H	2600	254.00	R	04/10/1975	5 R	04/10/1975
24N54E21DBDC	083	30	18	P	H	S	2550	10.00	RR	10/25/1975	--	--
24N54E21DBDD	083	500	6	S	E	H,S	2550	200.00	RR	10/25/1975	--	--
24N54E29CACB	083	190	6	P	E	S	2400	62.70	SR	10/16/1975	--	--
24N54E30CBCA	083	50	36	P	E	S	2440	9.70	SR	10/16/1975	--	--
24N54E30CBC	083	50	36	S	E	S	2440	10.20	SR	10/16/1975	--	--
25N52E22CDCA	083	60	12	J	E	S	2340	35.80	SR	11/12/1975	--	--
25N52E27BABA	083	--	24	--	--	--	2340	--		--	--	--
25N52E27BABA2	083	40	24	P	E	S	2340	14.20	SR	11/12/1975	3 V	11/12/1975
25N52E30D	083	166	6	S	G	S	2300	39.40	V	09/16/1978	10 R	08/22/1974
25N53E30CCBB	083	27	24	P	H	S	2420	12.00	RR	11/12/1975	2 V	11/12/1975
25N53E30CCBC	083	33	24	J	E	H	2420	19.00	RR	11/02/1975	--	--
25N53E32ADCA	083	30	12	--	--	U	2380	10.20	R	11/12/1975	--	--
25N53E32DBBD	083	30	16	--	--	U	2360	13.00	R	11/12/1975	--	--
25N53E32DBCD	083	40	16	P	W	U	2360	23.10	SR	11/12/1975	--	--
25N53E32DBCD2	083	346	4.5	S	E	H	2400	168.40	S	11/12/1975	12 R	08/05/1969
25N53E33CABA	083	72	12	P	W	U	2440	59.00	S	11/12/1975	1 V	11/12/1975

Table 2.--Logs of wells

[Thickness is in feet. Depth is in feet below land surface]

	Thickness	Depth
13N59E24BDD		
Clay	6	6
Gravel	6	12
Shale	28	40
Sand	6	46
Shale	34	80
Rock	5	85
Shale	5	90
Coal	10	100
Shale	40	140
Sand	10	150
Coal	30	180
Rock	6	186
Shale	54	240
Sand (good water)	15	255
Shale with coal streaks	12	267
13N61E18CCA		
Clay	7	7
Yellow sand	4	11
Shale	4	15
Sand (water)	3	18
Coal	1	19
Shale	15	34
Coal	27	61
Shale	6	67
14N60E10DDD		
Sand, very fine to fine, rounded, well-sorted	22	22
Clay, very silty, medium-gray to medium-dark-gray	11	33
Lignite, black to reddish-brown; saturated	14	47
Clay, slightly sandy, greenish-blue-gray	13	60
14N60E26BAA		
Clay, moderately sandy, moderate-yellowish-brown to pale-yellow; rust-brown below 20 ft	30	30
Clay, very silty, light-olive-gray to medium-gray	10	40
Sand, very fine, rounded, well-sorted, clayey, medium-gray; very silty below 45 ft; hard ledge at 60 ft	57	97
Lignite, black; water bearing	19	116
Clay, silty, medium-gray to greenish-gray	4	120
14N61E06CCA		
Clay, silty, moderately sandy, moderate-yellowish-brown to pale-yellow to light-brown; very sandy at 30 ft	35	35
Clay, very silty, slightly sandy, medium-light-gray to dark-gray, carbonaceous; lignite seams at 43 and 50 ft	16	51
Sand, very fine to fine, rounded, well-sorted, medium-light-gray; saturated at 60 ft	25	76
Lignite, black to reddish-brown, brittle	2	78
Clay, silty, medium-light-gray to medium-gray, hard	17	95
Clay, silty, greenish-gray	13	108
Lignite, black to reddish-brown, hard, saturated	19	127

Table 2.--Logs of wells--Continued

	Thickness	Depth
14N61E06CCA--Continued		
Clay, silty, slightly sandy, moderate-gray to olive-gray.	6	133
Sand, very fine, rounded, well-sorted, medium-light-gray; seams of lignite at 172 and 177 ft produce water.	67	200
15N59E12AAA		
Surface sand. . . .	10	10
Gravel.	20	30
Blue shale.	12	42
Gray shale.	23	65
Rock.	1	66
Sand and shale. . .	31	97
Rock.	3	100
Sand.	22	122
Coal.	13	135
Gray shale.	7	142
Sand.	60	202
15N59E36CCD		
Fill.	8	8
Gravel.	17	25
Shale	60	85
Coal.	10	95
Shale	165	260
Rock.	2	262
Shale	48	310
Coal.	20	330
Shale	240	570
Rock.	3	573
Shale	47	620
Coal.	5	625
Shale	160	785
Rock.	5	790
Sand.	110	900
15N60E18AAA		
Sand fill	8	8
Gravel.	7	15
Sand.	20	35
Sand and shale. . .	50	85
Gravel and sand . .	15	100

	Thickness	Depth
16N58E28DB		
Brown clay.	6	6
Gray clay	72	78
Coal.	4	82
Rock.	14	96
Coal.	3	99
Gravel and shale. .	4	103
Gray shale.	49	152
Sand (water). . . .	10	162
Sand and gray shale	6	168
16N59E07DBB		
Brown sand and clay	10	10
Coal.	2	12
Brown clay. . . .	18	30
Gray clay	27	57
Coal.	13	70
Gray clay	28	98
Coal.	7	105
Gray shale. . . .	165	270
Sandstone	1	271
Layers of fine gray sand (water) . .	27	298
Coal.	5	303
Gray shale. . . .	7	310
16N59E13CCB		
Sand.	80	80
Coal (water). . .	12	92
Clay.	13	105
Sandstone	3	108
Gray shale. . . .	58	166
Rock.	2	168
Shale	425	593
Rock.	4	597
Shale	11	608
Rock.	1	609
Shale	106	715
Fine gray shale .	27	742
Rock ledges . . .	4	746
Shale	37	783
Rock.	1	784
Shale	1	785
Rock.	1	786
Shale	43	829
Rock.	1	830
Shale	120	950
Rock.	2	952

Table 2.--Logs of wells--Continued

	Thickness	Depth
16N59E13CCB--Continued		
Sandstone layers. .	41	993
Rock.	4	997
Shale	58	1055
Sand (water). . . .	40	1095
16N59E29ABA		
Overburden.	5	5
Yellow clay	17	22
Gray clay	22	44
Dark shale.	14	58
Coal.	2	60
Gray shale.	24	84
Coal.	10	94
Gray shale.	31	125
Dark shale.	25	150
Gray shale.	56	206
Sand and bentonite (water) . . .	12	218
Gray shale.	8	226
Sandy clay.	31	257
Dark sand (water) .	8	265
16N60E02BDDB		
Surface sand. . . .	20	20
Shale	140	160
Sand.	20	180
Shale	40	220
Sand.	20	240
Shale	20	260
Coal.	10	270
Sand.	10	280
Shale	50	330
Sand.	10	340
Shale	20	360
Sand.	20	380
Coal.	20	400
Shale	120	520
Sand.	15	535
Shale	325	860
Sand.	55	915
Shale	185	1100
Sand.	115	1215
Shale	5	1220
17N44E24DAAA		
Yellow shale. . . .	2	2
Blue shale.	24	26

	Thickness	Depth
17N44E24DAAA--Continued		
Sandstone	13	39
Black shale	6	45
Blue shale.	2	47
Black shale	16	63
Coal.	2	65
Gray shale.	18	83
Sand (1 gal/min). .	4	87
Gray shale.	10	97
Gray sandy shale. .	4	101
Sand, dry	4	105
Sandstone	4	109
Blue shale.	16	125
Sand (10 gal/min) .	16	141
Black shale	2	143
17N44E30ABBC		
Yellow loam and sandstone.	70	70
Coal.	15	85
Blue shale.	20	105
Gray shale.	44	149
Bluish-gray shale .	21	170
Blue sandstone. . .	25	195
Blue shale.	8	203
17N44E36ACDD		
Yellow sandy loam .	20	20
Brown quicksand . .	10	30
Yellow shale. . . .	15	45
Gravel.	5	50
Light-blue shale. .	25	75
Coal (water). . . .	15	90
Light-blue shale. .	16	106
17N45E06AAAA		
Yellow sandy loam .	32	32
Sand.	26	58
Sandrock.	2	60
Coal.	5	65
Blue clay	35	100
Clay (water). . . .	15	115
Blue clay	5	120
17N45E06ABBD		
Yellow shale. . . .	12	12
Blue shale.	2	14
Yellow shale. . . .	20	34

Table 2.--Logs of wells--Continued

	Thickness	Depth
17N45E06ABBD--Continued		
Sandrock.	12	46
Sand (water). . . .	6	52
Blue shale.	3	55
17N45E11ACDD		
Topsoil	1	1
Yellow clay	2	3
Quicksand	5	8
Sandstone	6	14
Gumbo	6	20
Sand (water). . . .	5	25
Coal (3 gal/min). .	5	30
Gumbo	12	42
Sand (25 gal/min) .	23	65
17N45E12BCBD		
Yellow shale. . . .	10	10
Sand and gravel (little water) . .	11	21
Gray shale.	37	58
Coal.	4	62
Gray shale (little water)	4	66
Brown shale	30	96
Sand (water). . . .	9	105
17N58E10ACA		
Topsoil and clay. .	17	17
Sandy clay.	18	35
Gray clay	16	51
Coal.	4	55
Gray clay	43	98
Coal.	4	102
Gray shale.	17	119
Rock.	3	122
Sandstone	5	127
Hard gray shale . .	11	138
Sandstone	3	141
Hard gray shale . .	10	151
Sandstone	4	155
Hard shale.	5	160
Coal.	2	162
Gray shale.	83	245
Rock.	1	246
Gray shale.	135	381
Rock.	2	383
Gray shale.	95	478

	Thickness	Depth
17N58E10ACA--Continued		
Rock.	3	481
Dark-gray shale . .	41	522
Sandstone	8	530
Rock.	1	531
Hard gray and brown shale.	46	577
Rock.	2	579
Gray and brown shale.	89	668
Rock.	5	673
Hard gray shale . .	33	706
Rock.	5	711
Hard gray shale . .	24	735
Rock.	3	738
Gray shale.	58	796
Rock.	9	805
Gray to black sandstone; artesian strata	35	840
17N58E10ADB		
Log not available .	138	138
Coal.	3	141
Shale, gray	79	220
Coal.	4	224
Shale, Gray	26	250
Coal.	4	254
Shale, gray	26	280
Rock.	1	281
Shale, gray	91	372
Rock.	3	375
Shale, gray	100	475
Coal.	7	482
Shale, gray	213	695
Sandstone, fine-grained, gray. . .	25	720
Shale, gray	79	799
Sandstone, fine-grained, gray. . .	21	820
Shale, hard, gray .	10	830
Sandstone, coarse-grained.	25	855

Table 2.--Logs of wells--Continued

	Thickness	Depth
17N58E19CAA		
Gray clay	8	8
Coal	10	18
Brown sand	17	35
Gray clay	35	70
Coal	10	80
Gray clay	8	88
Sandstone	1	89
Gray shale	24	113
Coal	2	115
Gray shale	85	200
Sandstone	1	201
Gray shale	79	280
Gray sand (water)	45	325
Coal	---	325
17N58E34BAA		
Gray sandy clay	12	12
Brown sand and clay	43	55
Gray clay	5	60
Coal	14	74
Gray clay	64	138
Coal	6	144
Gray shale	48	192
Coal	11	203
Gray shale; small layers of coal	107	310
Sandstone	1	311
Shale	9	320
Sandstone	3	323
Gray shale	167	490
Gray sand (water)	15	505
Coal	2	507
Gray shale	13	520
18N43E12AAAB		
Clay	35	35
Gravel	5	40
Shale	24	64
Coal	8	72
Shale	58	130
Sand	27	157
Shale	3	160
18N44E08BAAB		
Sandstone, fine-grained, brown	34	34
18N44E08BAAB--Continued		
Claystone, gray	3	37
Sandstone, fine-grained, brown	18	55
Claystone, gray	3	58
Coal	4	62
Claystone, gray	18	80
18N44E14BABD		
Sandy loam	3	3
Yellow shale	23	26
Gray shale	3	29
Rock	1	30
Yellow shale	26	56
Sand (1 gal/min)	1	57
Blue shale	30	87
Sand (1 gal/min)	1	88
Blue shale	14	102
Coal (2 gal/min)	4	106
Blue shale	16	122
Sand (8 gal/min)	8	130
Blue shale	2	132
18N44E16CCCB		
Yellow loam	4	4
Brown quicksand	11	15
Yellowish-brown shale and rock	6	21
Coal	7	28
Gray shale	40	68
Coal	2	70
Gray shale	15	85
Gray sandstone	30	115
Gray shale	8	123
18N44E30BDCA		
Sand	10	10
Gravel	10	20
Coal	20	40
Shale	77	117
Sand	20	137
Shale	3	140
18N44E30CDD		
Sandstone, very fine grained; some brown to gray gravel	38	38

Table 2.--Logs of wells--Continued

	Thickness	Depth
18N44E30CDD--Continued		
Coal.	8	46
Siltstone to very fine grained gray sandstone.	14	60
18N45E24CDDC		
Black loam.	1	1
Yellow clay	23	24
Sand rock	65	89
Gumbo	10	99
Coal.	8	107
18N45E25BAAC		
Dark sand	10	10
White sand.	22	32
Gravel.	2	34
Coal.	2	36
Blue clay	4	40
18N45E30DDCB		
Topsoil	2	2
Yellow clay and sand	16	18
Coal.	12	30
Gumbo	2	32
Sandstone, hard . .	6	38
Gumbo and sand. . .	20	58
Gumbo	14	72
Sand (water). . . .	10	82
Gumbo	10	92
Sand (water). . . .	6	98
Coal, hard.	12	110
Gumbo	6	116
Sand (water). . . .	10	126
Gumbo	6	132
Gumbo and sand (water).	20	152
18N45E34DBBB		
Clay.	15	15
Shale	25	40
Coal.	4	44
Shale	66	110
Coal.	9	119
Shale	77	196
Coal.	9	205
Shale	91	296
18N45E34DBBB--Continued		
Sand.	10	306
Shale	74	380
Sand and coal . . .	15	395
Sand.	31	426
18N46E09BDAD		
Yellow shale. . . .	30	30
Brown shale	6	36
Blue gumbo.	8	44
Gray shale.	4	48
Blue shale.	18	66
Gray shale, soft. .	3	69
Blue shale.	23	92
Coal slack.	5	97
Blue shale.	15	112
Gray shale, soft. .	8	120
Blue shale, hard. .	16	136
Brown shale; some coal	4	140
Gray shale.	10	150
Gray shale, soft. .	8	158
Blue shale.	6	164
Hardrock.	3	167
Gray shale.	7	174
Sand (water). . . .	14	188
Shale	4	192
18N46E24ACCC		
Sand and seepage. .	28	28
Blue loam	67	95
Sand (water). . . .	4	99
Blue clay	6	105
18N46E33BBCA		
Black sandy loam. .	4	4
Yellow shale. . . .	22	26
Gray shale.	14	40
Black shale	2	42
Coal.	2	44
Blue shale.	28	72
Sand (1 gal/min). .	2	74
Blue shale.	22	96
Sand (1 gal/min). .	2	98
Blue shale.	28	126
Sand (9 gal/min). .	20	146
Gray shale.	9	155

Table 2.--Logs of wells--Continued

	Thickness	Depth
18N46E33DAAA		
Topsoil	1	1
Yellow clay	63	64
Coal mixed with clay	8	72
Sandy clay	33	105
Gumbo	4	109
Rock	2	111
Sandy clay	3	114
Sand (water)	14	128
Gumbo	8	136
18N46E35BBAD		
Black loam	4	4
Yellow shale	24	28
Sandstone	24	52
Blue shale	36	88
Coal	6	94
Gray shale	34	128
Sand (water)	2	130
Blue shale	20	150
Sand (10 gal/min)	16	166
Blue shale	8	174
18N57E11DACB		
Topsoil and sandy clay	18	18
Gravel and sand	10	28
Gray shale	67	95
Coal	3	98
Gray shale	54	152
Soft rock	2	154
Gray shale	15	169
Coal	4	173
Gray shale	20	193
Hard rock	3	196
Firm gray shale	29	225
Hard rock	54	279
Gray shale	11	290
Coal	3	293
Gray shale	224	517
Coal	11	528
Hard gray shale	40	568
Rock	1	569
Hard gray shale	26	595
Sand (4-1/2 gal/min flow)	20	615
Soft rock	2	617
18N57E11DACB--Continued		
Sandstone	30	647
Hard gray shale	12	659
Sandstone (water)	29	688
18N57E15ADCC		
Topsoil and yellow clay	10	10
Gravel and sand	11	21
Gray shale	10	31
Hard sheet rock	3	34
Gray shale	12	46
Rock	3	49
Gray shale	17	66
Coal	4	70
Gray shale	22	92
Coal	3	95
Gray shale	55	150
Hard shale	78	228
Sandstone	8	236
Hard shale	7	243
Sandstone	13	256
Hard shale	20	276
Coal	7	283
Gray shale	87	370
Shale	65	435
Gray shale	48	483
Rock	1	484
Coal	6	490
Gray shale	62	552
Gray sandstone	22	574
Fine sand; firm gray shale; artesian strata	11	585
Hard gray shale	75	660
Sandstone (water)	45	705
18N58E01CCC		
Topsoil and brown sand and clay	53	53
Coal	13	66
Gray clay	51	117
Coal	3	120
Gray clay	70	190
Layers of coal and shale	50	240
Gray shale	110	350
Sandstone	2	352

Table 2.--Logs of wells--Continued

	Thickness	Depth
18N58E01CCC--Continued		
Gray shale	123	475
Sandstone	4	479
Gray shale	56	535
Fine gray sand (water)	25	560
Gray shale	102	662
Sandstone	1	663
Gray shale	169	832
Sandstone	3	835
Gray shale	33	868
Sandstone	1	869
Gray shale	21	890
Sandstone	1	891
Gray shale	132	1023
Sandstone	1	1024
Gray shale	146	1170
Sand (water)	50	1220
18N58E14CDBB		
Sandy yellow clay	16	16
Yellow clay	30	46
Gray shale	6	52
Coal	1	53
Gray shale	7	60
Coal	2	62
Gray shale	3	65
Coal	2	67
Gray shale	75	142
Coal (little water)	14	156
Sandstone (water)	24	180
18N58E15BDAC		
Topsoil	20	20
Coal	6	26
Gray clay	64	90
Coal	4	94
Gray shale	15	109
Rock	4	113
Gray shale	33	146
Coal; streaks of sand (water)	14	160
18N58E21CDDD		
Topsoil	15	15
White clay	10	25
Coal	4	29
Gray shale	41	70
Coal	3	73
18N58E21CDDD--Continued		
Gray shale	3	76
Coal	10	86
Gray shale	19	105
Dark-gray shale	15	120
Sandstone	45	165
Sandstone (water)	30	195
18N58E27BAAD		
Topsoil and scoria	15	15
Yellow clay	45	60
Blue gumbo and soft shale	25	85
Coal	3	88
Blue soft shale	48	136
Coal	2	138
Sandstone (water)	41	179
Coal	11	190
Shale	4	194
18N60E04AD		
Scoria and sand fill	20	20
Shale	55	75
Hard rock	5	80
Shale	7	87
Rock	4	91
Shale	9	100
Sand with shale layers	60	160
19N43E23AADC		
Yellow clay	25	25
Blue clay	30	55
Bentonite	43	98
Gray clay	17	115
Gray clay (water)	5	120
Bentonite	85	205
Rock	1	206
Bentonite	14	220
Gray sand (water)	5	225
Bentonite	7	232
Rock	2	234
Bentonite	3	237
19N45E06CCCD		
Sandstone, fine- to medium-grained, brown to gray	82	82

Table 2.--Logs of wells--Continued

	Thickness	Depth
19N45E06CCCD--Continued		
Coal with parting of gray claystone at 87 ft	24	106
Sandstone, brown, highly oxidized; some loose gravel.	4	110
Claystone, gray	5	115
19N46E10CDCA		
Yellow clay	10	10
Soap.	5	15
Yellow clay	17	32
Coal slack.	2	34
Blue clay	26	60
Blue sand (water)	5	65
Gray clay	27	92
Gray sand (water)	6	98
Gray clay	7	105
19N46E29CAAA		
Yellow loam	35	35
Sand and seepage.	1	36
Yellow loam	8	44
Blue clay	12	56
Gray clay	9	65
Blue loam	10	75
Gray loam	27	102
Sand (water).	16	118
Coal.	6	124
Blue loam	7	131
19N47E01ABAD		
Yellow sandy dirt	24	24
Sand.	14	38
Blue clay	9	47
Sand (water).	12	59
Brown sand.	7	66
Sand (water).	3	69
Blue sandy loam	18	87
Sand (water).	8	95
Blue clay	5	100
19N48E10CADC		
Sand and gravel	5	5
Yellow clay	55	60
Blue clay	25	85
Yellow sand	10	95

	Thickness	Depth
19N48E10CADC--Continued		
Coal seep	3	98
Blue clay	12	110
Coal seep	2	112
Blue clay	7	119
Coal.	1	120
Blue clay	6	126
Rock.	1	127
Blue clay	25	152
Coal (water).	4	156
Brown clay.	10	166
Blue clay	9	175
Rock.	2	177
Blue clay	93	270
Gray sand (water)	25	295
Blue clay	5	300
19N57E27DDAC		
Topsoil and brown silt	3	3
Silt, clayey, brown	3	6
Gravel and sand, grayish-brown (water).	2	8
Sand, fine, brown.	1	9
Sand and gravel, gray.	2	11
Sand and gravel, brown.	1	12
Gravel and some sand	1	13
Gravel and sand, dark-brown	1	14
Sandstone	1	15
Shale, gray to black.	2	17
19N58E02DBBB		
Log not available.	509	509
Hard gray shale	11	520
Coal.	7	527
Crumbly shale	10	537
Fine sandstone.	30	567
Shale	16	583
Rock.	2	585
Shale	41	626
Coal.	7	633

Table 2.--Logs of wells--Continued

	Thickness	Depth
19N58E02DBBB--Continued		
Shale	54	687
Coal	7	694
Hard shale	29	723
Hard rock	2	725
Hard brown shale	210	935
Hard gray shale	74	1009
Crumbly gray sandstone	20	1029
19N58E04DDC		
Log not available	448	448
Coal	5	453
Gray clay	69	522
Coal	10	532
Gray shale	28	560
Sand	20	580
Gray shale	32	612
Sandstone	1	613
Gray shale	123	736
Sandstone	3	739
Gray shale	70	809
Sandstone	3	812
Gray clay	53	865
Sandstone	1	866
Artesian-water strata	49	915
19N59E02ACDD		
Topsoil and yellow clay	35	35
Gray clay	15	50
Black clay	3	53
Gray clay	17	70
Coal	5	75
Gray shale	27	102
Fine-grained sandstone	34	136
Gray shale	87	223
Coal	3	226
Gray shale	26	252
Rock	2	254
Firm gray shale	16	270
Fine-grained gray sandstone	30	300
19N59E07AAD		
Topsoil and clay	10	10
Scoria and yellow clay	8	18
Gray clay	7	25
Coal	2	27
Gray shale	44	71
Rock	3	74
Gray shale and thin rock layers	24	98
Coal	3	101
Gray shale	24	125
Coal	3	128
Gray shale	172	300
Fine-grained sandstone	23	323
Coarse sand and clay	39	362
Rock	7	369
Coarse sand	24	393
Rock	4	397
Gray shale	58	455
Brown shale	43	498
Rock	4	502
Gray shale	8	510
Rock	6	516
Light-gray sandstone	78	594
Rock	4	598
Hard gray shale	42	640
Rock	2	642
Hard gray shale	6	648
Rock	1	649
Hard brown and gray shale	86	735
Rock	1	736
Hard gray shale	148	884
Rock	5	889
Gray shale	25	914
Rock	5	919
Hard gray shale	63	982
Rock	2	984
Gray shale	56	1040
Hard sandstone	43	1083
Sandstone; artesian strata	24	1107
Hard shale	3	1110
19N59E13BDAD		
Brown sand and clay	85	85

Table 2.--Logs of wells--Continued

	Thickness	Depth
19N59E13BDAD--Continued		
Gray clay	5	90
Coal	3	93
Gray clay and coal layers	61	154
Coal	3	157
Gray shale	73	230
Sandstone	2	232
Gray shale	20	252
Gray sand (water)	43	295
Gray shale	15	310
19N60E17CD		
Topsoil and yellow clay	10	10
Yellow clay	20	30
Fine scoria and clay	3	33
Gray shale	19	52
Coal	3	55
Gray sand (water)	17	72
20N42E34AB		
Sand and gravel	20	20
Rock	2	22
Shale	19	41
Rock	6	47
Shale	93	140
Sand	15	155
Shale	55	210
Sand	15	225
20N44E27CBDA		
Yellow clay	60	60
Gray clay	10	70
Coal	8	78
Gray clay	12	90
Coal	19	109
Sand (1 gal/min)	5	114
Gray clay	26	140
Sand (1-1/2 gal/min)	5	145
Gray clay	35	180
Dry sand	8	188
Gray clay	4	192
Coal	13	205
Gray clay	7	212
Sand (7 gal/min)	12	224

	Thickness	Depth
20N45E17CCBB		
Yellow clay	18	18
Sand rock	3	21
Gray clay	70	91
Rocks	4	95
Clay	43	138
Coal	4	142
Clay	98	240
Coal	14	254
Sand	27	281
20N45E20DDBC		
Siltstone and very fine grained sandstone, gray to brown; iron nodules	15	15
Claystone, gray	15	30
Siltstone, gray to brown	10	40
Claystone, carbonaceous, gray	5	45
Siltstone and very fine grained sandstone, brown to gray; iron nodules	37	82
Claystone, carbonaceous, gray	14	96
Coal	19	115
Claystone, gray	15	130
Siltstone, gray	10	140
20N45E30DBAB		
Claystone, brown	13	13
Siltstone, brown	19	32
Coal	20	52
Claystone, gray	6	58
Sandstone, gray to blue	6	64
Claystone, gray	16	80
20N46E19BBAC		
Yellow clay	39	39
Coal	6	45
Blue shale	8	53
Rock	22	75
Blue shale	10	85

Table 2.--Logs of wells--Continued

	Thickness	Depth
20N46E20CADA		
Topsoil	70	70
Brown clay	15	85
Blue shale	5	90
Gray sand rock	13	103
Blue shale	64	167
Coal	3	170
20N46E27BCAB		
Yellow loam	15	15
Blue clay	6	21
Sandy loam	11	32
Blue shale	15	47
Sand (water)	20	67
Coal	6	73
Sand (water)	11	84
20N47E04BBBB		
Sandstone, very fine grained, brown; contains gravel	11	11
Claystone, carbonaceous, gray	2	13
Soapstone, iron nodules, brown	4	17
Claystone, carbonaceous, gray	4	21
Siltstone and very fine grained sandstone, gray	31	52
Claystone, carbonaceous, gray	25	77
Siltstone and very fine grained sandstone, gray	35	112
Claystone, blue	4	116
Sandstone, fine- to medium-grained, gray	112	228
Coal	16	244
Siltstone and very fine grained sandstone	16	260
20N47E29ABAA		
Clay and sandstone	65	65
Silt	30	95
Blue sandy clay	30	125
20N47E29ABAA--Continued		
Clay	30	155
Sand	7	162
20N47E30ACCC		
Brown clay	4	4
Yellow clay	27	31
Yellow sand rock	4	35
Rock	15	50
Blue clay	2	52
Coal	5	57
Gray sand	8	65
Blue clay	-	65
20N47E30ACCC2		
Topsoil	2	2
Brown shale and rock	28	30
Light-blue shale	17	47
Coal	5	52
Blue shale	48	100
Sandy shale (water)	8	108
Coal	4	112
Blue shale	4	116
20N48E04ACDC		
Sandy clay	20	20
Shale	34	54
Sand rock	6	60
Shale	25	85
Coal	11	96
Shale	74	170
Sand	24	194
20N48E11BBCC		
Sand and gravel (water)	23	23
Blue clay	16	39
Sandy clay	5	44
Sand (water)	56	100
Blue clay	1	101
20N50E18CDDA		
Sandy clay	18	18
Gravel	2	20
Shale	9	29
Coal	3	32
Shale	18	50

Table 2.--Logs of wells--Continued

	Thickness	Depth
20N50E18CDDA--Continued		
Coal.	8	58
Shale	36	94
Sand.	26	120
Shale	5	125
20N51E07ADAB		
Yellow loam	12	12
Gravel.	2	14
Blue clay	12	26
Sand and seepage. .	4	30
Blue clay	12	42
Brown clay.	6	48
Sand.	2	50
Blue clay	5	55
Sand.	2	57
Blue clay	25	82
Coal.	13	95
Blue clay	5	100
Shale	6	106
Gray loam	4	110
Brown loam.	16	126
Gray loam	4	130
Sand (water). . . .	9	139
Blue clay	3	142
Sandstone	5	147
20N54E01DCDD		
Gravel and gray carbonaceous clay	5	5
Clay, silty, carbonaceous, gray	10	15
Silt to very fine sand, carbonaceous, gray to light-blue; iron	27	42
Very fine sand, reddish-brown. . .	3	45
Clay, silty to very fine sandy, blue .	30	75
Clay, as above, very carbonaceous.	8	83
Sandstone, medium-grained, grayish-brown.	4	87
Silt, reddish-gray; high iron.	8	95

	Thickness	Depth
20N54E01DCDD--Continued		
Sand, fine to medium, blue to grayish-brown. . .	15	110
Sand, as above; contains pyrite . . .	4	114
Clay, silty, blue .	2	116
Sandstone, fine- to medium-grained, grayish-brown. . .	9	125
Clay, silty, blue .	5	130
Sand, fine to medium, carbonaceous, gray	15	145
Clay, silty, gray to bluish-gray . .	31	176
Coal.	16	192
Clay, carbonaceous, gray	4	196
Coal.	13	209
Clay, silty, carbonaceous, gray . . .	11	220
20N56E24CBDB		
Clay.	10	10
Soft clay	37	47
Sand and gravel . .	25	72
Shale	20	92
Sand (water). . . .	11	103
20N57E21CDDA		
Brown clay.	14	14
Gravel and sand . .	34	48
Yellow clay	36	84
Coal and black shale.	23	107
Gray sandy shale. .	19	126
Gray shale.	9	135
Gray shale and sand	6	141
Gray shale.	22	163
Gray sandy shale. .	6	169
Grayish-brown shale	2	171
Gray sandy shale. .	7	178
Gray shale and bentonite.	5	183
Gray sandy shale. .	15	198
Gray shale.	6	204
Brown shale	3	207

Table 2.--Logs of wells--Continued

	Thickness	Depth
20N57E21CDAA--Continued		
Gray sandy shale. .	37	244
Gray shale; thin vein of coal . . .	32	276
Gray shale.	17	293
Gray and black shale and coal . .	3	296
Gray shaly sand . .	43	339
Coal.	6	345
Gray shale.	16	361
Hard shell.	2	363
Grayish-green sandy shale.	21	384
Hard shell.	2	386
Sandstone (water) .	6	392
20N58E29CBC		
Gravel.	42	42
Blue clay	3	45
Gravel.	42	87
Blue clay	44	131
Sand.	7	138
Blue clay	23	161
Rock.	3	164
Blue clay	46	210
Rock.	4	214
Blue shale.	106	320
Rock.	3	323
Blue shale.	137	460
Rock.	8	468
Blue shale.	122	590
Rock.	2	592
Blue shale.	107	699
Sandstone	9	708
Rock.	4	712
Gray shale.	43	755
Rock.	2	757
Gray shale.	10	767
Sandstone	10	777
Rock.	2	779
Gray shale.	30	809
Sand.	6	815
Gray shale.	27	842
Rock.	4	846
Gray shale.	26	872
Rock.	1	873
Gray sandy shale. .	5	878
Sandstone	52	930

	Thickness	Depth
20N58E29CBC--Continued		
Rock.	2	932
Sandstone	16	948
Hard sandstone. . .	21	969
Gray shale.	18	987
Brown shale	24	1011
Gray shale.	31	1042
Sandstone (water) .	31	1073
Gray shale.	10	1083
20N58E34DDD		
Topsoil and yellow clay	45	45
Sand.	10	55
Gravel.	18	73
Gray sand	17	90
Coal.	8	98
Sandstone	3	101
Gray sand	13	114
Gray clay	21	135
Coal.	2	137
Gray clay	108	245
Coal.	11	256
Gray sandy clay . .	14	270
Sandstone	1	271
Gray shale.	41	312
Coal.	3	315
Gray shale.	26	341
Sandstone	1	342
Gray shale.	163	505
Gray sandy clay . .	27	532
Coal.	5	537
Gray shale.	33	570
Artesian-water strata	50	620
20N59E03DBA		
Brown sand and clay	38	38
Gray clay	9	47
Coal.	5	52
Gray clay	76	128
Coal.	14	142
Gray shale.	16	158
Sandstone	1	159
Gray shale.	38	197
Coal.	8	205
Gray shale.	10	215
Sand.	18	233

Table 2.-- Logs of wells--Continued

	Thickness	Depth
20N59E03DBA--Continued		
Sandstone	2	235
Gray shale	62	297
Gray sandy clay	196	493
Sandstone	3	496
Sand and sandy clay	74	570
Gray shale	83	653
Sandstone	1	654
Gray shale	95	749
Sandstone	2	751
Gray shale	79	830
Sandstone	2	832
Gray shale	141	973
Sandstone	2	975
Gray shale	242	1217
Sandstone	3	1220
Gray shale	47	1267
Sandstone	1	1268
Gray shale	12	1280
Artesian-water strata	40	1320
Shale	-	1320
20N59E04DDDB		
Topsoil, sand, gravel, and clay	12	12
Gray clay	18	30
Sandy clay	25	55
Gravel	1	56
Dark-gray clay	58	114
Soft sandy clay	6	120
Dark-gray clay	11	131
Coal	11	142
Dark-gray clay	23	165
Soft shale	11	176
Coal	7	183
Sandstone	29	212
Coal	3	215
Coarse sandstone (water)	11	226
Rock	2	228
Gray shale	14	242
20N59E11BDC		
Topsoil and sandy yellow clay	35	35
Gravel and clay	15	50
Gray clay	10	60

	Thickness	Depth
20N59E11BDC--Continued		
Coal	2	62
Gray clay	72	134
Coal	9	143
Gray shale	63	206
Coal	9	215
Gray shale	11	226
Coal	11	237
Gray shale	75	312
Coal	6	318
Gray shale	21	339
Sandstone	4	343
Gray shale	27	370
Coal	12	382
Gray shale	11	393
Sandstone	12	405
Gray shale	102	507
Rock	2	509
Gray shale	92	601
Coal	6	607
Hard gray shale	45	652
Coal	5	657
Gray shale	79	736
Rock	4	740
Gray shale	82	822
Rock	2	824
Hard gray shale	163	987
Rock	2	989
Gray shale	4	993
Rock	2	995
Gray shale	55	1050
Hard gray shale	300	1350
Hard shale and rock	17	1367
Layers of sandstone and hard gray shale; artesian strata	23	1390
20N60E10BDBC		
Topsoil and sandy clay fill	12	12
Yellow clay	13	25
Gray and yellow clay	20	45
Firm gray clay	76	121
Soft rock	3	124
Sand, coal, and shale; layered	16	140

Table 2.--Logs of wells--Continued

	Thickness	Depth
20N60E10BDBC--Continued		
Gray shale.	23	163
Soft rock	3	166
Shale; coal 1 ft. .	19	185
Rock.	2	187
Gray sandstone. . .	51	238
Gray sandstone (water).	12	250
21N42E15DDCC		
Brown sand.	5	5
Gray sandstone. . .	5	10
Brown sand.	17	27
Brown shale	8	35
Gray sandstone. . .	2	37
Brown shale	13	50
Gray sand	30	80
Gray sandstone. . .	5	85
Gray sand	30	115
Gray shale.	40	155
Gray sand	18	173
Gray shale.	30	203
Gray sand	28	231
Black shale	25	256
21N43E36BCCD		
Silt, clayey. . . .	1	1
Silt and very fine to fine sand, brown.	3	4
Sand, very fine to fine	3	7
Sand and gravel, brown.	1	8
Sand, fine, and gravel	2	10
Sand, fine, and silt, brown; some pebbles.	2	12
Clay, silty, dark-brown.	5	17
Clay, silty, grayish-blue . . .	1	18
21N45E16ABBC		
Yellow clay	20	20
Sand and clay . . .	175	195
Gray sand (water) .	5	200

	Thickness	Depth
21N45E16ABBC--Continued		
Blue shale.	1	201
21N45E26DAAD		
Sandstone, very fine to medium-grained; some carbonaceous; iron stained.	78	78
Coal.	15	93
Claystone, blue to gray	2	95
21N45E35BCDC		
Yellow clay and sand	63	63
Blue shale.	4	67
Gray sand	29	96
Coal (water). . . .	22	118
21N46E19BCDA		
Yellow sand	28	28
Rock.	2	30
Yellow sand	30	60
Gray sand	40	100
Coal (water). . . .	6	106
21N46E29DCCB		
Yellow clay	25	25
Coal.	1	26
Yellow clay	10	36
Gray clay	14	50
Sand.	10	60
Gray clay	8	68
Rock.	10	78
Gray clay	1	79
Sand.	1	80
Coal.	4	84
Gray clay	16	100
Sand (water). . . .	12	112
21N46E32CCAA		
Yellow sand	61	61
Blue clay	7	68
Sand (water). . . .	2	70
Blue clay	83	153
Sand.	5	158
Blue clay	52	210

Table 2.--Logs of wells--Continued

	Thickness	Depth
21N46E32CCAA--Continued		
Sand (water). . . .	5	215
21N47E17BDDA		
Sand.	20	20
Sand, blue clay, and coal.	15	35
21N47E17DAAB		
Sand	20	20
Blue clay.	20	40
Coal and sand. . .	4	44
21N47E17DAAD		
Sand	20	20
Sand, rocks, and coal.	9	29
21N48E26BBCC		
Clay	49	49
Coal	3	52
Blue clay.	18	70
Coal and sand (water)	1	71
Blue clay	4	75
21N48E27BDCC		
Yellow clay	29	29
Rock.	2	31
Yellow clay	19	50
Coal.	5	55
Yellow clay	10	65
Blue clay	17	82
Sand (1 gal/min). .	3	85
Blue clay	61	146
Rock.	2	148
Blue clay	6	154
Sand (water). . . .	6	160
Blue clay	2	162
21N53E08ADCC		
Silt to very fine sand, clayey, brown.	25	25
Gravel.	7	32
Clay, carbonaceous, gray; contains iron	5	37
Coal.	15	52
Clay, carbonaceous, gray	13	65
Clay, very silty, light-brown. . . .	5	70
21N54E04BCCB		
Yellow clay	47	47
Blue clay	3	50
Shale rock.	2	52
Blue clay	25	77
Sandy clay.	11	88
Clay.	2	90
Sand.	4	94
Clay.	10	104
Coal.	18	122
Clay.	2	124
Sand.	3	127
Clay.	5	132
Sand.	2	134
Coal.	6	140
Sand.	9	149
Clay.	11	160
Sand.	3	163
Coal shale.	2	165
Clay.	11	176
Sandy	6	182
Clay.	21	203
Sandstone	3	206
Clay and sand . . .	24	230
Clay.	2	232
Soft coal	2	234
Clay.	2	236
Coal.	1	237
Clay.	1	238
Coal.	2	240
Clay.	10	250
Sand.	2	252
Coal.	2	254
Clay.	30	284
Sand.	3	287
Clay.	2	289
Coal.	1	290
Clay.	17	307
Sand.	2	309
Coal.	2	311
Clay.	32	343

Table 2.--Logs of wells--Continued

	Thickness	Depth
21N54E04BCCB--Continued		
Sand (water). . . .	3	346
21N54E12ACCC		
Yellow clay	28	28
Brown clay.	32	60
Pink clay	28	88
Brown sand.	12	100
Blue shale.	16	116
Coal.	17	133
Blue shale.	43	176
Coal.	10	186
Blue shale.	17	203
Coal.	6	209
Blue shale.	21	230
Sand.	8	238
21N54E33DCAC		
Gravel.	17	17
Bluish-green clay .	29	46
Rock.	11	57
Bluish-green clay .	23	80
Sand (water). . . .	23	103
21N56E26BAAC		
Gravel.	16	16
Clay.	5	21
Quicksand	16	37
Clay and sandstone	5	42
Blue clay	13	55
Blue clay and sand	26	81
Coal (2-1/2 gal/ min)	4	85
Sand and blue clay	5	90
21N56E28ADDC		
Sand, coarse. . . .	4	4
Clay, silty, brown.	6	10
Clay, silty, carbonaceous, gray, brown and blue . .	47	57
Silt to very fine sand, blue. .	13	70
Clay, silty, carbonaceous, blue. .	16	86

	Thickness	Depth
21N56E28ADDC--Continued		
Sand, very fine, bluish-gray. . . .	12	98
Clay, silty, carbonaceous, dark-gray	10	108
Silt to very fine sand, carbonaceous, blue . . .	12	120
Clay, silty, carbonaceous, gray	6	126
Silt to fine sand, gray	8	134
Clay, silty, carbonaceous, gray to light-blue; some gray silt to very fine sand	46	180
Silt to very fine sand, gray	10	190
Coal.	7	197
Clay, silty, gray	2	199
Coal.	5	204
Clay, silty, gray, to very fine sand.	16	220
21N57E10CDDD		
Dirt.	6	6
Gravel.	22	28
Brown clay.	35	63
Coal.	18	81
Coal and sand . . .	12	93
Gray shale.	22	115
Gray shale and sand	68	183
Coal.	6	189
Gray shale.	23	212
Coal (water). . . .	8	220
21N57E16DCCB		
Gravel and dark clay	7	7
Yellow clay	7	14
Gravel and coarse sand	14	28

Table 2.--Logs of wells--Continued

	Thickness	Depth
21N57E16DCCB--Continued		
Gray sand	5	33
Gravel and sand	4	37
Gravel and coarse sand	16	53
Green clay	9	62
Gummy coal	1	63
Rough gravel	1	64
Hard coal	3	67
Hard gray clay	2	69
Sandy gray clay; water	8	77
Gray clay	5	82
Coal	1	83
Blue clay	9	92
Gray clay	22	114
Sandy gray clay	6	120
Sandy gray clay (water)	4	124
Coarse blue sand	4	128
Blue sand (water)	4	132
Sand	1	133
21N57E36CDCC		
Sandstone	30	30
Sand	215	245
Gravel and sand (water)	4	249
21N58E03DBB		
Gravel and boulders	10	10
Brown sand	115	125
Gravel	18	143
Gray clay	45	188
Coal	9	197
Gray clay	34	231
Sandstone	1	232
Gray shale	38	270
Sandstone	1	271
Gray shale	57	328
Coal	8	336
Gray shale	40	376
Sand	34	410
Gray shale	86	496
Sandstone	1	497
Gray shale	160	657
Sandstone	1	658
Gray sand (water)	17	675
Gray shale	57	732
Sandstone	2	734
Gray shale	100	834
Sandstone	2	836
Gray shale and sandy clay	248	1084
Sandstone	2	1086
Gray shale	49	1135
Gray sand (3 gal/min)	30	1165
Gray shale	60	1225
Layers sandstone and sand (5 gal/min)	15	1240
Shale	85	1325
21N58E06ABBC		
Topsoil	11	11
Soft yellow clay	8	19
Crumbly coal	3	22
Gray clay; few gravel	22	44
Yellow clay	23	67
Hard blue clay; few gravel and a little water at 48 ft	4	71
Gray clay	11	82
Slightly sandy gray clay	32	114
Hard gray clay	2	116
Soupy gray clay	12	128
Hard gray clay	11	139
Dark gray clay	9	148
Sand and gray clay	4	152
Fine gray sand	11	163
Hard coal	6	169
Hard gray clay	3	172
Sand and gravelly clay	5	177
Fine blue clay (water)	15	192
Hard gray clay	6	198
Sand and gray clay	9	207
Hard coal	2	209
Dark-gray clay and sand	5	214

Table 2.--Logs of wells--Continued

	Thickness	Depth
21N58E06ABBC--Continued		
Fine bluish-gray sand (water)	-	214
21N58E30DDA		
Topsoil and yellow clay	30	30
Coal	10	40
Gray clay	36	76
Coal	11	87
Gray shale	78	165
Sandstone	25	190
Shale	36	226
Coal	4	230
Gray shale	34	264
Coal	5	269
Gray shale	18	287
Rock	1	288
Gray shale	9	297
Rock	3	300
Crumbly gray shale	32	332
Coal	4	336
Shale	44	380
Sandstone	25	405
Hard gray shale	84	489
Coal	6	495
Hard gray shale	7	502
Coal	4	506
Gray shale	54	560
Hard rock	4	564
Hard brown shale	25	589
Coal	6	595
Hard gray shale	125	720
Sandstone (2-1/2 gal/min flow)	21	741
Coal	4	745
Hard gray shale	30	775
Rock, soft	2	777
Sandstone (3-1/2 gal/min)	21	798
Firm gray shale	32	830
21N59E08BCD		
Topsoil and sandy clay	12	12
Sand, scoria, and gravel	16	28
Gray clay	6	34

	Thickness	Depth
21N59E08BCD--Continued		
Rock	2	36
Light-gray clay	28	64
Rock	5	69
Firm gray shale and thin layers of sandstone	89	158
Coal	15	173
Hard shale	27	200
Light-gray shale	35	235
Coal	4	239
Light and dark shale	68	307
Coal	4	311
Sandy shale	26	337
Coal	2	339
Firm gray shale	65	404
Coal	3	407
Soft gray shale and thin layers of drift sand (3 gal/min)	173	580
Hard gray shale	62	642
Rock	1	643
Hard dark-gray shale	99	742
Hard rock	4	746
Hard gray and brown shale	101	847
Rock	3	850
Medium-hard gray shale	30	880
Rock	3	883
Hard gray shale	154	1037
Hard rock	5	1042
Hard firm shale	116	1158
Rock	1	1159
Hard gray shale	81	1240
Sandstone; artesian strata (20 gal/min)	30	1270
21N59E13CDC		
Yellow clay fill	18	18
Soft gravel and clay fill	7	25
Soft rock	6	31
Gray clay	14	45
Gray shale	47	92

Table 2.--Logs of wells--Continued

	Thickness	Depth
21N59E13CDC--Continued		
Coal.	2	94
Gray shale.	26	120
Firm sandstone. . .	7	127
Sandstone	25	152
Gray shale.	76	228
Coal.	7	235
Gray shale.	74	309
Hard rock	2	311
Sandstone	24	335
Gray shale.	72	407
Hard rock	7	414
Sandstone	16	430
Firm gray shale . .	100	530
Gray shale; layers brown to black . .	70	600
Gray shale.	22	622
Rock.	5	627
Hard tough gray shale.	125	752
Rock.	8	760
Hard gray shale . .	40	800
Medium-hard gray shale.	26	826
Hard gray shale . .	99	925
Medium-hard gray shale.	76	1001
Hard gray shale . .	14	1015
Hard rock	1	1016
Gray shale.	29	1045
Hard rock	1	1046
Hard gray shale . .	34	1080
Hard rock	3	1083
Hard gray shale . .	31	1114
Hard dark-gray shale.	23	1137
Rock.	1	1138
Hard dark shale . .	29	1167
Rock.	3	1170
Hard gray shale . .	28	1198
Medium-hard shale .	38	1236
Rock.	3	1239
Hard gray shale . .	37	1276
Hard shale or hard sandstone.	60	1336
Sandstone; artesian strata	32	1368

	Thickness	Depth
21N59E14BCA		
Topsoil and yellow clay fill.	44	44
Sand fill	10	54
Coal.	5	59
Gray clay	11	70
Coal.	4	74
Gray clay	43	117
Rock.	2	119
Gray shale.	35	154
Rock.	6	160
Shale, sandstone, and soft rock, layered.	61	221
Coal.	24	245
Sandstone	30	275
Gray shale.	47	322
Rock.	1	323
Sandstone and hard shale layers . . .	25	348
Gray shale.	14	362
Rock.	4	366
Firm gray shale . .	16	382
Coal.	3	385
Gray shale.	92	477
Coal.	5	482
Gray shale.	118	600
Sandy yellowish-brown shale. . . .	28	628
Rock.	3	631
Hard gray shale . .	198	829
Rock.	2	831
Hard gray shale . .	138	969
Rock.	6	975
Hard gray shale . .	135	1110
Rock.	2	1112
Hard gray shale . .	146	1258
Medium-hard shale .	42	1300
Hard gray shale . .	9	1309
Sandstone; artesian strata	21	1330
21N59E15DDBA		
Brown sandy clay. .	3	3
Sandstone and gravel	8	11
Yellow clay	24	35

Table 2.--Logs of wells--Continued

	Thickness	Depth
21N59E15DDBA--Continued		
Sandstone	2	37
Sandy blue clay	11	48
Blue clay	31	79
Hard sandstone	29	108
Sand	12	120
Yellow clay	12	132
21N59E22DDC		
Brown sandy clay	14	14
Coal slack	1	15
Brown sandy clay	13	28
Gray sandy clay	26	54
Gray shale	84	138
Sand	14	152
Gray shaly sand	55	207
Coal	3	210
Gray shale	22	232
Coal	3	235
Gray shale	41	276
Gray shaly sand	4	280
Gray shale and sand	15	295
Gray shale	6	301
Coal (water)	5	306
21N59E30BBCA		
Brown sand and clay	43	43
Gray clay	27	70
Coal	8	78
Clay	22	100
Coal	5	105
Clay and sand; layered	15	120
Gray clay	41	161
Sandstone	2	163
Gray sand (water)	31	194
Coal	-	194
21N59E33DBBB		
Topsoil	7	7
Fine gray clay	48	55
Coal	3	58
Gray shale	50	108
Gray sandstone	17	125
Gray shale	22	147
Coal	10	157
Gray shale and sandstone	115	272
Coal	6	278
21N59E33DBBB--Continued		
Gray shale	76	354
Coal	3	357
Gray shale	60	417
Coal	3	420
Gray shale	232	652
Coal	7	659
Gray shale	173	832
Sandstone	3	835
Gray shale	77	912
Rock	3	915
Gray shale	59	974
Rock	2	976
Gray shale	209	1185
Rock	1	1186
Gray shale	70	1256
Rock	3	1259
Hard dark-gray shale	3	1262
Gray sandstone; artesian strata	38	1300
21N59E35CCAA		
Topsoil and brown sandy clay	55	55
Gray clay	40	95
Coal	3	98
Gray clay and shale	79	177
Coal	5	182
Gray shale	128	310
Fine sand and shale; layered	35	345
Gray shale	20	365
Coal	11	376
Gray shale	21	397
Sandstone	2	399
Sandstone (water)	51	450
22N45E27AADB		
Clay	19	19
Brown sand	13	32
Coal	2	34
Sticky blue clay	22	56
Fine sandy clay	5	61
Hard coal (3 gal/min)	1	62
Clay	10	72
Fine sandy clay	4	76
Fine sharp sand	2	78

Table 2.--Logs of wells--Continued

	Thickness	Depth
22N45E27AADB--Continued		
Medium-hard coal. .	2	80
Blue clay	25	105
Extra hard sandstone.	2	107
Blue clay	24	131
Clay with coal. . .	6	137
Clay with coal streaks.	14	151
22N45E31BBDB		
Sandy soil.	40	40
Shale	20	60
Coal.	2	62
Shale	133	195
Coal.	3	198
Shale	27	225
Sandstone	45	270
22N47E01ACAD		
Yellow clay	38	38
Sand rock	2	40
Gray clay	23	63
Brown clay.	11	74
Fine sand (4 gal/min)	8	82
22N48E06ABBC		
Yellow clay	40	40
Sand (water). . . .	8	48
22N48E17DDCA		
Yellow clay	45	45
Gray clay	91	136
Sand (water). . . .	18	154
22N49E08ADDC		
Topsoil	2	2
Brown clay.	8	10
Very soft clay. . .	10	20
Yellow clay	20	40
Sand and gravel (water).	2	42
22N51E11BCCA		
Clay, sand and gravel	4	4
Soft yellow clay. .	23	27

	Thickness	Depth
22N51E11BCCA--Continued		
Soft gray clay. . .	11	38
Gray clay	18	56
Fine sand (1 gal/min)	4	60
Coal.	47	107
Gray shale.	3	110
Coal.	11	121
Gray shale.	5	126
Rock.	30	156
Gray and brown shale, layered . .	2	158
Fine sand (water) .	32	190
22N51E19CBBB		
Clay.	35	35
Coal.	2	37
Gray clay	37	74
Coal.	5	79
Gray clay	89	168
Soft sandstone. . .	6	174
Fine sand (water) .	8	182
22N52E14BACD		
Clay.	44	44
Sandstone	1	45
22N52E20DC		
Yellow sandy clay .	70	70
Shale and thin coal veins.	958	1028
Sand (water). . . .	20	1048
Rock.	2	1050
Sand (water). . . .	5	1055
Shale	85	1140
Very hard brown sandstone.	45	1185
Sand.	37	1222
Shale	3	1225
22N52E28B		
Yellow sandy clay .	140	140
Shale and various coal veins	902	1042
Hard rock	10	1052
Fine sand (water) .	10	1062
Hard sandstone. . .	8	1070
Sand (water). . . .	10	1080

Table 2.--Logs of wells--Continued

	Thickness	Depth
22N52E28B--Continued		
Dark shale and sand rock	85	1165
Coarse sand (water)	32	1197
Hard rock	4	1201
22N52E30DCCD		
Yellow sandy clay	33	33
Blue clay	3	36
Yellow sand	6	42
Coal	2	44
Yellow sandstone	5	49
Blue clay	11	60
22N56E02DBBB		
Sand gravel	40	40
Brown clay	40	80
Brown sand	12	92
Brown shale	3	95
22N56E15BDCC		
Brown clay	42	42
Gray shale	43	85
Coal	2	87
Gray shale	28	115
Gray shale and sand (water)	32	147
Gray shale	9	156
22N58E09BABB		
Sand gravel	57	57
Red shaly sand	56	113
Gray shaly sand	1	114
Rock	5	119
Grayish-brown shale	38	157
Gray sand and shale streaks	5	162
Coal	3	165
Gray shale	2	167
22N58E10CCCC		
Gravel	40	40
Blue clay	48	88
Brown sandy clay	10	98
Blue sandy clay	17	115
Sandstone (water)	19	134
Blue clay	1	135

	Thickness	Depth
22N58E12DCC		
Clay and layers of gravel	45	45
Gray clay	17	62
Coarse sand	44	106
Gravel	32	138
Gray clay	107	245
Gray sand	23	268
Sandstone	3	271
Gray shale	75	346
Coal	12	358
Gray shale	92	450
Sandstone	1	451
Gray shale	62	513
Sandstone	1	514
Gray shale	129	643
Coal	5	648
Gray shale	44	692
Coal	6	698
Gray shale	14	712
Sandstone	1	713
Gray shale	58	771
Coal	6	777
Gray shale	77	854
Sandstone	2	856
Fine gray sand	9	865
Gray shale	205	1070
Sandstone	1	1071
Shale and sandy clay	45	1116
Sandstone	1	1117
Artesian-water strata	13	1130
Sandstone	1	1131
Shale	9	1140
22N58E36DDD		
Topsoil and brown sand	30	30
Gravel	37	67
Gray clay	5	72
Gray sand and clay	113	185
Gray clay	10	195
Coal	3	198
Gray clay	20	218
Coal	22	240
Gray shale	8	248

Table 2.--Logs of wells--Continued

	Thickness	Depth
22N58E36DDD--Continued		
Sandstone	8	256
Gray shale	19	275
Coal	10	285
Gray shale	8	293
Sandstone	1	294
Gray sand	46	340
Gray shale	52	392
Sandstone	3	395
Gray shale	55	450
Sandy clay	86	536
Sandstone	1	537
Gray shale	66	603
Coal	9	612
Gray shale	31	643
Coal	4	647
Gray shale	43	690
Sandstone	7	697
Gray sandy clay	12	709
Coal	4	713
Gray shale	53	766
Sandstone	2	768
Gray shale	129	897
Sandstone	4	901
Gray shale	88	989
Sandstone	2	991
Gray shale	89	1080
Artesian-water strata	40	1120
22N59E13CCBB		
Brown sandy clay	25	25
Coal	3	28
Gray clay	7	35
Brown sand	6	41
Gray sandy clay	6	47
Sandstone	2	49
Gray shale	67	116
Coal	4	120
Gray shale	125	245
Coal	15	260
Gray shale	56	316
Coal	22	338
Gray shale	22	360
Sandy clay	32	392
Sandy shale	5	397
Gray coarse-grained sandstone	13	410
22N59E28BCC		
Topsoil and sandy clay	16	16
Sand and fine gravel	16	32
Clay	11	43
Soft rock	4	47
Gray clay	16	63
Gray shale	32	95
Sandstone	26	121
Gray shale	199	320
Sandstone	5	325
Gray shale	105	430
Sandstone	12	442
Gray shale	68	510
Rock	2	512
Sandstone	18	530
Gray shale	274	804
Sandstone	18	822
Hard gray shale	222	1044
Rock	2	1046
Hard gray shale	43	1089
Rock	2	1091
Hard shale	12	1103
Sandstone; artesian strata	69	1172
22N60E07CCDB		
Topsoil and clay	8	8
Quicksand and coal	38	46
Gray shale	37	83
Coal	3	86
Blue shale	19	105
Rock	1	106
Shale	12	118
Soft clay or sand	5	123
Clay or bentonite and fine sand	4	127
Sand (water)	21	148
23N50E30BBAB		
Drift	23	23
Shale	66	89
Sand (water)	19	108
23N51E04ABBB		
Sandy loam	25	25

Table 2.--Logs of wells--Continued

	Thickness	Depth
23N51E04ABBB--Continued		
Clay.	9	34
Sand and gravel (water).	6	40
23N51E04ABBC		
Sandy loam.	25	25
Clay.	9	34
Sand and gravel . .	6	40
23N51E04ABBC2		
Sand loam	25	25
Clay.	9	34
Sand and gravel . .	6	40
Water strata. . . .	-	40
23N53E01ABAA		
Clay.	12	12
Gravel.	6	18
Coal.	2	20
Clay.	20	40
23N53E10DDDB		
Brown clay.	26	26
Brown clay, sand, and gravel	6	32
Brown clay and gravel	6	38
Gray shale.	8	46
Coal and gray shale	4	50
Gray shale.	12	62
Coal (water). . . .	14	76
Gray shale.	2	78
23N53E14BAAB		
Hand dug well . . .	27	27
Sand and coal slack	8	35
Brown shale and coal	7	42
Gray shale.	31	73
Coal.	3	76
Gray shale.	8	84
Coal.	15	99
Gray sandy shale. .	5	104
Hard rock	1	105
Gray shale and coal	10	115
Gray shale and sand (water).	6	121
23N53E14BAAB--Continued		
Gray shale.	16	137
Coal.	2	139
Gray sand (water) .	4	143
Gray shale.	31	174
Coal (water). . . .	3	177
24N53E13BCCC		
Topsoil	2	2
Sand.	13	15
Yellow clay	15	30
Coal.	5	35
Blue clay (water) .	5	40
Sand (water). . . .	15	55
Coal.	2	57
25N52E27BABA2		
Topsoil	1	1
Dark clay	19	20
Gravel (water). . .	9	29
Clay.	11	40
25N53E32DBCD2		
Brown sand and clay	18	18
Gray sandy shale. .	32	50
Gray shale.	38	88
Black shale	2	90
Gray shale.	36	126
Rock.	1	127
Gray shale.	14	141
Gray shale with coal streaks . . .	4	145
Gray shale.	5	150
Sandy gray shale (1 gal/min)	18	168
Gray shale.	24	192
Gray sandy shale. .	3	195
Gray sticky shale .	46	241
Gray shale.	26	267
Muddy sand.	6	273
Gray shale with coal streaks . . .	6	279
Gray shale.	17	296
Sandy gray shale (water).	4	300
Coal.	2	302
Gray shale.	24	326
Loose sand.	18	344
Sandstone (water) .	2	346

Table 3.--Chemical analyses of water from wells

[Except as indicated otherwise, constituents are dissolved and constituent values are reported in milligrams per liter. Laboratory specific conductance and laboratory pH: f, field determination. Analysis by: MBMG, Montana Bureau of Mines and Geology; USGS, U.S. Geological Survey. ug/L, microgram per liter; umho/cm, micromho per centimeter]

Sample location	Date of collection	Depth of well (feet)	Laboratory specific conductance (umho/cm at 25°C)	Laboratory pH	Field temperature (°C)	Total hardness as $CaCO_3$	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium adsorption ratio	Potassium (K)	Bicarbonate (HCO_3)
13N59E29AAAB	9-29-76	400	3,220	7.7	13.5	260	54	31	740	20	6	890
13N60E06CBBB	9-29-76	80	1,440	7.6	7.5	350	62	48	210	5	6	530
13N61E18CCA	8-18-76	60	3,000f	7.0f	10.0	1,100	210	130	480	6	13	990
14N59E12CBD	12-10-75	916	1,900f	8.8f	14.5	9	2.3	.9	480	68	1	620
14N59E15ABBB	9-30-76	116	2,300	7.3	8.5	1,120	190	160	160	2	10	630
14N60E10DDD	7-28-76	47	1,000f	6.5f	11.0	570	130	58	11	.2	4	360
14N60E26BAA	8-17-76	114	1,550f	7.1f	12.0	740	140	95	150	2	8	680
14N61E06CCA	7-29-76	155	1,650	7.6	10.0	470	82	65	250	5	10	680
14N61E06CCA2	7-29-76	124	4,000	8.2	11.0	160	27	21	920	32	7	900
15N60E18AAA	11-29-76	100	7,030	7.4	12.0	490	95	62	1,700	34	8	1,760
15N60E22CCCD	9-30-76	150	2,800	7.6	10.0	420	77	55	530	11	6	810
16N58E28DB	9-29-76	168	2,120	7.6	13.0	260	50	34	410	11	5	660
16N60E02BDDB	9-29-76	1,220	1,860	8.3	10.0	8	2.4	.5	500	77	2	1,230
17N44E01ACAA	7-22-75	72	3,050	7.1	15.0	1,000	180	140	440	6	11	1,060
17N44E03ADCD	7-23-75	34	2,140	8.0	10.0	820	190	81	230	4	6	720
17N44E12ABBC2	7-22-75	100	3,830	7.6	10.0	950	170	130	710	10	9	1,260
17N44E13CCBD	7-28-75	140	3,130	10.4	9.0	3	1.2	.0	720	176	4	60
17N44E17BAAD	7-25-75	47	2,860	8.2	9.0	730	120	100	450	7	6	720
17N44E19ABBB	7-23-75	180	3,020	8.6	11.0	48	11	5.3	690	43	3	480
17N44E24AAAA	7-28-75	317	3,350	7.8	9.0	57	11	7.3	810	47	3	1,060
17N44E29ABBB	7-23-75	180	4,960	8.2	8.0	1,100	200	140	970	13	11	980
17N44E30 3BC	7-23-75	203	3,400	8.4	11.0	150	35	14	790	28	4	940
17N44E32ADAA	7-24-75	42	4,950	8.6	8.0	810	79	150	980	15	10	400
17N44E32ADAC	7-24-75	785	2,230	9.2	13.0	14	4.4	.8	560	65	2	1,120
17N44E32ADAC2	7-24-75	47	4,410	8.4	9.0	1,200	140	200	710	9	12	370
17N44E34DDBA	7-24-75	126	3,530	8.9	10.5	200	9.8	44	780	24	8	520
17N44E36ACDD	7-29-75	106	3,190	7.8	9.0	260	45	35	710	19	7	1,110
17N45E01DCAA	7-28-75	50	897	7.2	10.0	500	120	49	6.6	.1	3	500
17N45E04BDBB	7-22-75	140	4,140	7.0	10.0	820	140	120	790	12	10	1,180
17N45E11ACDD	7-28-75	65	2,150	7.4	9.0	960	160	140	170	2	8	840
17N45E12BCBD	7-28-75	105	1,060	6.7	10.0	560	110	68	17	.3	4	320
17N45E23BBAB	7-22-75	130	3,700	7.7	10.5	390	50	65	810	18	8	1,430
17N45E25BABC	7-29-75	86	1,270	7.3	10.5	710	140	86	21	.3	5	810
17N59E26DBA	9-29-76	230	2,730	8.4	10.0	42	8.4	5	650	44	3	880
18N43E10DABD	9-08-75	110	2,200	7.6	10.5	1,200	190	180	90	1	6	580
18N43E13AAAA	9-09-75	300	2,190	6.6	11.0	17	4.2	1.6	500	53	2	640
18N44E13AAAB	5-05-76	278	2,850	8.5	13.0	44	8.4	5.5	720	47	3	490
18N44E14BABD	7-17-75	132	2,880	8.2	11.0	46	8.0	6.3	670	43	3	620
18N44E16CCCB	7-16-75	123	4,640	9.3	10.0	140	9.4	29	1,100	39	5	310
18N44E19BDAD	7-16-75	100	2,650	8.0	10.0	33	7.4	3.6	630	47	2	630
18N44E30BDCA	7-17-75	140	3,270	8.1	11.0	56	10	7.3	820	48	3	980
18N45E27DADD	7-18-75	54	1,240	7.0	9.0	670	120	88	34	.5	5	410
18N45E30DDCB	7-21-75	152	2,900	7.3	9.5	660	98	100	490	8	12	1,080
18N45E34ACCD	7-18-75	364	3,310	8.1	13.0	110	17	16	820	34	6	1,040
18N45E34DBBB	7-18-75	426	3,080	8.0	11.0	140	22	20	750	28	5	1,050
18N46E35BBAD	8-4-75	174	4,640	7.7	11.0	430	80	56	1,200	24	7	1,800
18N57E11DACB	9-23-76	688	1,790	8.8	15.0	6	1.8	.5	450	77	1	830
18N58E15BDAC	9-22-76	160	2,080	8.6	13.5	11	2.2	1.2	510	68	2	810
18N59E25CCB	9-22-76	320	3,040	8.6	10.0	50	10	5.8	690	42	3	590
18N60E04AD	9-21-76	160	5,320	7.4	9.5	530	100	66	1,200	23	7	1,350
19N43E04BADD	8-05-75	214	1,670	8.8	17.0	7	2.1	.5	430	70	1	930
19N44E01ADCD	7-15-75	60	1,910	8.1	9.0	520	98	66	300	6	5	570
19N44E19BBAB	7-17-75	141	2,230	8.4	10.5	16	3.8	1.6	590	64	2	1,050
19N44E20DADD	7-15-75	26	1,010	7.7	10.0	170	30	24	180	6	4	320
19N44E29CBBB	7-15-75	90	2,090	8.3	10.0	14	3.4	1.3	510	60	2	750

Date of collection	Carbonate (CO_3)	Total alkalinity as $CaCO_3$	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Silica (SiO_2)	Dissolved solids, sum of constituents	Nitrate as N	Iron (Fe) (ug/L)	Lithium (Li) (ug/L)	Manganese (Mn) (ug/L)	Analysis by
9-29-76	0	730	1,000	20	0.4	11	2,360	0.12	510	100	110	MBMG
9-29-76	0	440	360	3.5	.3	17	966	<.02	1,300	50	310	MBMG
8-18-76	0	810	1,200	8.0	.2	14	2,550	--	270	70	500	USGS
12-10-75	83	640	350	18	1.9	13	1,260	--	20	--	10	USGS
9-30-76	0	520	920	8.5	<.1	12	1,780	.03	7,700	80	240	MBMG
7-28-76	0	290	270	5.7	.1	13	670	--	30	20	200	USGS
8-17-76	0	560	460	7.6	.2	16	1,220	--	20	50	210	USGS
7-29-76	0	560	440	4.6	.1	11	1,200	--	20	70	40	USGS
7-29-76	42	810	1,300	5.5	.6	8.0	2,780	--	20	70	50	USGS
11-29-76	0	1,450	2,700	19	.2	9.8	5,500	.97	800	200	170	MBMG
9-30-76	0	670	870	4.0	.4	9.6	1,960	.04	3,300	70	70	MBMG
9-29-76	0	540	610	4.5	.2	10	1,450	<.02	1,600	60	100	MBMG
9-29-76	4	1,020	.2	48	4.5	23	1,190	.10	350	60	10	MBMG
7-22-75	0	870	1,100	5.9	0.1	10	2,400	1.7	10	--	100	MBMG
7-23-75	0	590	680	6.0	.1	9.4	1,560	1.8	40	--	1,400	MBMG
7-22-75	0	1,030	1,400	6.0	.1	8.1	3,100	2.0	50	--	580	MBMG
7-28-75	230	430	1,100	18	.4	1.1	2,120	1.7	<10	--	<10	MBMG
7-25-75	0	590	1,100	7.8	.2	9.3	2,130	.56	10	--	<10	MBMG
7-23-75	30	440	1,100	12	.7	7.2	2,080	.77	<10	--	<10	MBMG
7-28-75	0	870	880	11	.4	7.9	2,260	1.7	10	--	10	MBMG
7-23-75	0	800	2,300	7.6	.1	11	4,070	2.3	20	--	170	MBMG
7-23-75	29	820	1,000	11	.4	8.8	2,370	.59	<10	--	30	MBMG
7-24-75	19	360	2,500	13	<.1	5.8	3,980	1.6	40	--	<10	MBMG
7-24-75	110	1,100	34	55	1.9	8.2	1,330	.70	40	--	<10	MBMG
7-24-75	10	320	2,300	4.3	<.1	9.8	3,590	3.3	10	--	10	MBMG
7-24-75	38	490	1,400	12	.1	6.8	2,510	1.3	10	--	<10	MBMG
7-29-75	0	910	880	7.0	.1	9.5	2,240	2.5	10	--	50	MBMG
7-28-75	0	410	100	1.4	.2	12	550	.45	20	--	600	MBMG
7-22-75	0	960	1,500	2.6	.2	8.1	3,170	4.4	30	--	80	MBMG
7-28-75	0	690	640	4.3	.2	13	1,540	1.2	10	--	10	MBMG
7-28-75	0	260	320	11	0.2	11	700	0.27	700	--	190	MBMG
7-22-75	0	1,170	970	7.2	.2	5.1	2,620	2.0	20	--	60	MBMG
7-29-75	0	660	100	2.2	.1	11	772	0.81	10	--	100	MBMG
9-29-76	4	730	710	5.0	.4	8.2	1,820	.40	70	50	20	MBMG
9-08-75	0	480	750	44	.1	12	1,570	21	40	50	110	MBMG
9-09-75	0	530	480	25	2.3	6.8	1,350	1.9	20	--	<10	MBMG
5-05-76	21	440	1,000	31	2.0	6.9	2,040	--	30	--	--	USGS
7-17-75	0	510	910	24	1.3	7.1	1,940	.95	<10	--	20	MBMG
7-16-75	52	340	2,000	21	.5	.9	3,350	4.5	10	--	10	MBMG
7-16-75	0	510	850	18	1.6	6.7	1,820	1.5	10	--	10	MBMG
7-17-75	0	810	1,000	7.2	.6	6.9	2,380	1.4	10	--	10	MBMG
7-17-75	0	330	390	7.0	<.1	11	856	1.3	410	--	220	MBMG
7-21-75	0	890	810	4.8	.1	9.9	2,070	2.1	30	--	70	MBMG
7-18-75	0	850	950	23	.5	7.3	2,360	14	20	--	40	MBMG
7-18-75	0	860	870	15	.6	7.5	2,210	1.9	<10	--	30	MBMG
8-04-75	0	1,480	1,400	21	.4	9.0	3,640	2.4	10	--	50	MBMG
9-22-76	35	740	180	48	4.4	11	1,130	<.02	20	50	<10	MBMG
9-22-76	17	690	390	8.5	3.1	7.0	1,340	<.02	770	30	10	MBMG
9-22-76	14	500	980	9.0	1.3	7.8	2,010	<.02	100	50	30	MBMG
9-21-76	0	1,100	1,900	9.0	.4	9.0	4,000	.28	800	150	80	MBMG
8-05-75	36	820	57	50	5.4	8.3	1,050	.79	10	--	<10	MBMG
7-15-75	0	460	660	6.1	.2	8.1	1,420	.40	20	--	140	MBMG
7-17-75	20	900	330	43	2.0	6.6	1,520	2.6	50	--	<10	MBMG
7-15-75	0	260	290	2.2	.3	5.8	691	.45	<10	--	<10	MBMG
7-15-75	0	610	460	22	2.4	6.4	1,380	.97	10	--	<10	MBMG

Table 3.--Chemical analyses of water from wells--Continued

Sample location	Date of collection	Depth of well (feet)	Laboratory specific conductance (μmho/cm at 25°C)	Laboratory pH	Field temperature (°C)	Total hardness as $CaCO_3$	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium adsorption ratio	Potassium (K)	Bicarbonate (HCO_3)
19N44E31CCDA	7-15-75	78	3,440	7.4	9.5	470	78	66	700	14	6	910
19N45E10DDCA	7-17-75	189	3,280	8.2	10.5	230	42	31	740	21	6	730
19N45E11ACCA	7-01-75	66	4,320	7.3	11.0	1,500	230	230	610	7	15	870
19N45E35DDBB	7-17-75	128	1,500	7.4	10.5	780	84	140	77	1	7	660
19N46E08ACDA	7-22-75	63	1,020	7.2	9.0	560	130	57	15	.2	3	660
19N46E08CDAC	7-22-75	150	2,670	7.9	9.0	61	11	8.2	630	35	4	840
19N46E08CDDB	7-22-75	135	990	8.3	12.0	320	50	46	97	2	5	530
19N46E10CDCA	7-21-75	105	3,260	7.8	9.0	290	43	44	760	20	5	1,170
19N46E15CBCA	7-22-75	80	3,920	7.8	11.0	11	1.3	1.9	970	126	2	1,240
19N46E17DAAC	7-22-75	135	710	7.4	9.5	320	48	50	29	.7	3	390
19N46E17DAAD	7-22-75	157	2,610	7.7	10.0	700	110	110	400	6	5	750
19N46E27DBCA	7-23-75	48	1,000	6.6	9.0	540	110	67	18	.3	4	420
19N46E28ABBA	7-23-75	120	1,820	8.4	--	670	32	140	190	3	11	410
19N46E29CAAA	7-23-75	131	860	6.7	9.5	430	48	74	27	.5	6	460
19N46E32CCCD	7-23-75	93	1,010	6.7	9.0	390	45	67	72	1	7	470
19N46E32DCDD	7-23-75	56	620	6.3	9.5	330	84	29	3.4	0	2	370
19N47E01ABAD	7-28-75	100	2,980	7.4	9.0	560	87	84	510	9	5	630
19N47E02ADBB	7-28-75	63	1,640	7.7	9.0	240	29	41	290	8	5	500
19N47E02ADBB2	7-28-75	90	3,230	7.7	10.0	600	100	83	570	10	6	850
19N47E08CCDC	7-29-75	85	1,980	7.4	10.0	1,000	180	140	92	1	4	490
19N47E08DCDC	7-29-75	61	2,000	6.9	8.0	770	110	120	200	3	8	940
19N47E10ACDC	7-28-75	20	3,200	6.6	8.0	1,600	240	250	230	2	3	380
19N47E10DBBA	7-28-75	130	3,660	7.1	10.0	96	16	14	880	39	4	960
19N47E10DBBD	7-28-75	60	4,160	6.9	8.0	1,000	120	170	760	10	11	670
19N47E13ABBA	7-28-75	50	4,310	6.8	--	1,700	300	230	530	6	10	780
19N47E13DDCB	7-28-75	33	2,060	6.7	9.0	1,000	170	140	140	2	6	900
19N47E20ADDC2	7-29-75	20	2,370	7.3	5.5	430	63	66	440	9	5	880
19N48E02CBDA	11-19-75	109	2,320	8.2	10.5	62	9.4	9.4	580	32	3	1,190
19N48E10DACA	10-03-75	1,518	1,800	8.6f	21.5	4	1.6	.1	460	95	1	980
19N48E12BAAB	11-18-75	80	1,230	7.8	10.0	320	56	44	160	4	4	430
19N49E34AABD	10-29-75	81	1,760	7.8	6.0	560	90	80	220	4	6	480
19N56E26CBCA	9-22-76	120	1,770	7.7	8.5	910	160	120	60	.9	7	390
19N58E03DBBB	9-28-76	450	2,640	8.4	10.5	13	2.9	1.4	730	89	2	1,840
19N60E17CD	9-22-76	72	4,130	6.9	8.0	2,240	420	290	330	3	11	740
20N42E22CA	9-01-76	80	2,510	8.0	10.0	15	4	1.1	590	67	2	700
20N45E11BADC	8-20-75	186	5,510	6.8	10.0	130	22	17	1,400	54	5	1,140
20N45E17CCBB	8-20-75	281	3,490	7.0	9.5	640	95	98	670	11	8	1,230
20N45E34DBCC	5-07-76	278	2,080	8.4	11.0	22	3.7	3.1	520	48	2	910
20N46E02ADCD	8-08-75	30	1,020	8.1	7.0	460	78	63	51	1	4	280
20N46E28ABBC	8-12-75	120	1,440	7.0	12.0	620	99	91	120	2	6	640
20N47E36ADDD	5-06-76	220	3,400	8.3	11.5	26	4.8	3.4	610	52	3	1,660
20N48E07BDAC	9-12-75	55	1,340	7.8	9.5	400	77	50	160	4	5	480
20N48E22CCCD	9-27-75	276	3,090	7.8	10.0	570	66	97	570	10	7	930
20N49E18CCDC	5-06-76	120	3,400	7.7	9.0	190	31	27	820	26	5	1,190
20N49E27AADC	11-21-75	29	1,890	7.8	9.5	780	110	120	100	2	5	500
20N49E34DDCC	11-18-75	183	5,070	8.2	11.0	110	16	17	1,300	53	5	1,460
20N50E18CDDA	10-01-75	110	1,280	7.9	9.5	530	98	69	98	2	5	400
20N53E26AAAD	9-02-76	81	2,510	7.4	11.0	1,480	300	180	97	1	5	420
20N54E01DCDD	5-04-76	220	1,830	7.0	9.0	1,100	210	150	43	.6	8	570
20N54E02BCAA	9-09-76	116	2,370	7.2	8.0	1,500	290	190	50	.6	8	600
20N55E19DBCD	9-10-76	53	620	7.7	8.0	300	56	38	13	.3	2	270
20N56E24CBDB	9-11-76	103	2,830	7.6	9.5	410	66	59	550	12	10	910
20N57E21CDDA	9-16-76	392	2,130	8.5	14.0	11	2.1	1.4	520	69	2	1,000
20N58E34DDD	10-02-75	620	1,700f	8.8f	14.0	6	2.2	.1	540	81	1	770
21N42E15DDCC	9-01-76	256	3,710	7.9	10.5	41	11	3.1	940	63	3	1,520
21N44E16DBCD	9-03-76	15	770	7.8	10.5	300	55	39	59	2	3	290
21N44E23BBDC	8-07-75	123	4,990	7.6	11.0	120	28	11	1,200	50	5	1,280
21N45E16ABBC	9-03-75	201	5,010	6.9	10.0	480	120	43	1,100	22	5	1,020
21N45E20DCCD	11-19-75	89	3,530	7.9	10.0	290	57	37	810	21	6	870
21N45E34BBDA	8-18-75	189	3,590	6.8	10.0	130	24	17	820	31	5	820

Date of collection	Carbonate (CO_3)	Total alkalinity as $CaCO_3$	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Silica (SiO_2)	Dissolved solids, sum of constituents	Nitrate as N	Iron (Fe) (µg/L)	Lithium (Li) (µg/L)	Manganese (Mn) (µg/L)	Analysis by
7-15-75	0	750	1,200	8.1	.3	7.1	2,540	.77	30	--	80	MBMG
7-17-75	0	600	1,200	18	.6	6.6	2,420	5.7	<10	--	50	MBMG
7-01-75	0	710	2,100	9.6	<.1	9.4	3,650	4.5	30	--	90	MBMG
7-17-75	0	540	390	6.8	<.1	9.0	1,030	1.1	10	--	140	MBMG
7-22-75	0	540	36	3.8	.1	11	586	5.7	10	--	10	MBMG
7-22-75	0	690	710	9.6	.3	6.6	1,800	.90	<10	--	20	MBMG
7-22-75	0	430	99	2.1	.1	9.6	572	.50	70	--	10	MBMG
7-21-75	0	960	970	9.6	.2	7.2	2,420	1.8	10	--	100	MBMG
7-22-75	0	1,020	1,100	12	.3	8.3	2,670	3.6	<10	--	<10	MBMG
7-22-75	0	320	68	2.7	0.1	10	406	0.86	10	--	40	MBMG
7-22-75	0	620	880	12	.2	8.6	1,890	3.1	<10	--	20	MBMG
7-23-75	0	350	240	5.3	0.2	8.6	659	.20	60	--	200	MBMG
7-23-75	14	360	670	3.3	<.1	12	1,280	2.1	<10	--	20	MBMG
7-23-75	0	380	100	2.4	<.1	5.8	498	.14	50	--	40	MBMG
7-23-75	0	380	160	2.4	.1	13	597	.61	<10	--	130	MBMG
7-23-75	0	300	26	3.8	.1	9.0	342	1.3	10	--	<10	MBMG
7-28-75	0	520	1,100	6.6	.7	7.3	2,110	1.2	10	--	<10	MBMG
7-28-75	0	400	450	3.2	.3	6.6	1,070	1.0	10	--	<10	MBMG
7-28-75	0	700	1,100	6.7	.4	7.7	2,280	4.0	10	--	<10	MBMG
7-29-75	0	400	670	45	.1	11	1,410	20	10	--	<10	MBMG
7-29-75	0	770	430	4.3	.1	11	1,350	3.9	10	--	70	MBMG
7-28-75	0	310	1,700	3.6	.2	9.9	2,630	7.1	20	--	<10	MBMG
7-28-75	0	780	1,200	19	1.5	7.2	2,620	1.9	<10	--	<10	MBMG
7-28-75	0	550	2,000	5.6	.2	4.5	3,400	3.4	20	--	60	MBMG
7-28-75	0	640	2,100	8.0	.2	8.3	3,600	4.4	40	--	700	MBMG
7-28-75	0	740	510	1.2	.2	8.7	1,420	1.4	50	--	600	MBMG
7-29-75	0	720	670	5.7	0.3	8.6	1,700	0.84	180	--	80	MBMG
11-19-75	0	980	340	17	1.7	7.9	1,560	.14	50	30	10	MBMG
10-03-75	24	840	3.4	100	4.7	13	1,090	--	20	--	10	USGS
11-18-75	0	350	310	6.3	0.5	11	803	.32	10	--	50	MBMG
10-29-75	0	390	640	6.6	.2	8.8	1,300	1.1	20	--	<10	MBMG
9-22-76	0	320	480	84	.2	22	1,170	33	50	40	10	MBMG
9-28-76	5	1,520	.3	61	2.4	7.9	1,720	.03	100	70	10	MBMG
9-22-76	0	600	2,200	11	.2	11	3,670	.17	3,800	190	420	MBMG
9-01-76	0	570	630	27	2.4	8.3	1,600	.44	240	100	10	MBMG
8-20-75	0	940	2,100	16	.6	6.7	4,100	13	350	--	<10	MBMG
8-20-75	0	1,000	1,100	11	.2	11	2,550	5.2	20	--	40	MBMG
5-07-76	41	820	360	18	3.3	6.4	1,410	--	130	30	<20	USGS
8-08-75	0	230	280	48	.1	10	671	.88	<10	--	<10	MBMG
8-12-75	0	520	350	3.8	.1	13	996	.25	60	--	140	MBMG
5-06-76	0	1,360	14	22	2.8	6.9	1,490	--	210	--	--	USGS
9-12-75	0	400	320	3.0	.1	8.7	1,730	2.8	<10	--	<10	MBMG
9-27-75	0	760	1,000	11	.6	6.1	2,240	1.4	<10	--	40	MBMG
5-06-76	0	980	1,000	24	0.9	7.6	2,500	--	20	70	40	USGS
11-21-75	0	410	600	7.7	.2	11	1,210	1.5	630	30	60	MBMG
11-18-75	0	1,200	1,600	15	1.5	6.3	3,640	3.9	20	--	<10	MBMG
10-01-75	0	330	390	2.7	.3	10	869	.77	<10	--	20	MBMG
9-02-76	0	340	1,200	22	.2	9.6	2,060	.27	130	40	510	MBMG
5-04-76	0	470	770	2.9	.1	18	1,490	--	1,300	40	130	USGS
9-09-76	0	500	1,000	8.4	<.1	14	1,890	.22	870	50	880	MBMG
9-10-76	0	220	20	14	.2	15	307	20	30	10	<10	MBMG
9-11-76	0	750	810	6.0	1.1	13	1,970	1.9	1,600	80	70	MBMG
9-16-76	21	850	300	3.8	3.2	8.8	1,350	.06	160	30	10	MBMG
10-02-75	47	710	200	61	3.5	11	1,160	--	30	--	10	USGS
9-01-76	0	1,240	740	26	1.4	9.4	2,470	.04	780	150	20	MBMG
9-03-76	0	240	150	10	1.0	7.9	471	5.0	40	30	<10	MBMG
8-07-75	0	1,050	1,700	15	1.0	6.8	3,590	2.9	20	--	20	MBMG
9-03-75	0	840	2,000	9.8	.6	16	3,840	3.5	20	--	170	MBMG
11-19-75	0	710	1,300	9.0	.7	9.6	2,680	.32	490	80	110	MBMG
8-18-75	0	680	1,200	16	.8	7.7	2,540	13	<10	--	10	MBMG

Table 3.--Chemical analyses of water from wells--Continued

Sample location	Date of collection	Depth of well (feet)	Laboratory specific conductance (µmho/cm at 25°C)	Laboratory pH	Field temperature (°C)	Total hardness as $CaCO_3$	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium adsorption ratio	Potassium (K)	Bicarbonate (HCO_3)
21N45E34BBDA2	8-18-75	17	6,540	7.2	8.0	1,700	160	310	1,100	12	19	920
21N45E35BCDC	8-20-75	118	3,490	6.9	9.5	200	27	32	790	24	5	1,120
21N46E19BCDA	11-19-75	105	2,840	7.4	9.5	1,400	190	220	220	3	9	770
21N46E29ACDA	9-20-75	240	2,980	7.8	12.0	570	70	95	520	10	10	1,000
21N48E12BBCB	9-19-75	260	2,980	8.3	12.0	28	6.2	3.1	700	57	2	680
21N49E20CCBA	9-18-75	76	4,180	7.9	11.0	390	57	60	940	21	7	1,220
21N51E14CBBB	9-24-75	138	3,230	8.2	12.0	920	160	120	500	7	8	730
21N52E17DA	9-08-76	38	890	7.6	8.5	280	38	45	110	3	3	550
21N53E08ADCC	5-04-76	70	2,630	6.9	11.0	1,700	270	240	67	.7	8	650
21N53E22DAAB	9-01-76	128	1,300	7.3	10.0	760	180	77	12	.2	4	580
21N54E04BCCB	9-11-76	346	1,870	8.4	10.5	16	3.3	1.9	440	48	2	630
21N54E22CBDD	9-10-76	85	730	7.5	12.0	360	72	44	23	.5	3	410
21N55E14ABAD	9-10-76	406	3,970	7.8	10.0	410	68	58	860	18	7	920
21N56E26BAAC	9-13-76	90	520	7.8	12.5	250	47	33	14	.4	3	330
21N57E10CDDD	9-13-76	214	1,220	7.5	9.0	240	33	38	200	6	5	570
21N58E03CBBC	9-09-76	1,240	1,760	8.8	13.0	6	1.7	.4	440	81	2	910
21N59E30BBCA	9-15-76	194	2,610	8.1	12.0	14	2.5	2.0	720	82	2	1,850
21N60E29BABA	9-15-76	--	5,740	8.1	9.5	113	20	16	1,500	60	5	1,390
22N44E23DDBC	8-07-75	37	1,570	7.9	7.0	480	91	60	190	4	4	450
22N45E30BADC	9-03-75	150	4,720	7.2	13.0	160	35	18	1,100	38	5	1,290
22N46E33DBBD	9-05-75	210	3,460	6.7	10.0	37	8.2	3.9	820	59	3	820
22N47E21CDCC2	8-13-75	70	1,440	7.2	8.5	830	140	120	34	.5	4	610
22N48E06ABBC	9-16-75	48	680	8.0	10.5	360	72	43	12	.3	3	370
22N49E08ADDC	9-19-75	42	1,570	7.8	9.0	500	78	74	190	4	4	510
22N50E29CCDB	9-17-75	25	1,650	8.7	9.0	340	26	68	250	6	5	350
22N51E01ADDA	11-21-75	40	1,700	7.4	7.5	770	110	120	120	2	5	450
22N51E10ADDA	9-24-75	111	2,600	8.5	10.5	20	3.8	2.5	620	60	2	660
22N52E20DC	10-03-75	1,225	1,650f	8.6f	19.0	5	1.9	.1	440	84	2	850
22N52E25CBCA	10-10-75	153	5,310	8.0	7.0	220	39	30	1,300	39	6	620
22N52E30DCCD	9-30-75	60	1,140	7.8	8.5	580	68	100	37	.6	7	460
22N53E22BDCB	10-08-75	196	3,700	7.9	8.0	850	150	120	630	9	11	710
22N54E32BAAC	9-14-76	230	1,950	7.3	10.5	560	93	80	260	5	7	690
22N55E32ABDB	9-13-76	140	6,440	7.1	10.5	2,480	400	360	920	8	19	1,040
22N56E15BDCC	9-11-76	150	1,010	7.5	9.0	520	100	65	29	0.6	5	420
22N58E09BABB	9-16-76	167	2,480	7.8	11.0	1,340	150	240	96	1	11	350
22N58E12DCC	10-02-75	1,140	1,980f	8.6f	16.5	8	1.8	.9	480	73	2	1,010
22N59E13CCBB	9-11-76	410	2,410	8.1	10.0	15	3.7	2	660	74	3	1,740
23N50E14CACB	9-25-75	39	2,370	8.1	11.5	310	51	46	460	11	5	770
23N50E14CACC	9-25-75	26	2,170	8.0	12.5	320	59	43	440	10	5	810
23N51E04ABBB	10-27-75	40	2,290	8.1	7.0	270	46	37	460	12	5	760
23N51E13ABAB	10-21-75	135	2,560	8.5	8.5	170	32	22	590	20	4	1,060
23N52E18BDAC	11-21-75	88	4,090	8.2	9.5	95	15	14	1,000	46	5	1,420
23N52E18BDBA	10-21-75	190	1,940	8.5	9.0	11	2.2	1.4	510	66	2	1,140
23N52E22BDDC	10-23-75	11	1,340	8.0	7.5	580	100	78	120	2	4	480
23N53E14BAAB	10-16-75	177	3,120	8.4	8.5	37	5.8	5.4	780	56	3	1,050
23N54E18ADDA	10-17-75	51	600	8.2	8.5	340	85	31	3.1	.1	2	390
24N52E28BBAD	10-07-75	33	2,250	8.2	10.0	600	49	120	320	6	2	440
24N53E15CCCD	10-13-75	30	1,240	8.0	8.0	630	120	83	46	.8	3	400
24N54E09CDDD	10-24-75	40	2,390	7.9	9.5	1,100	170	160	230	3	9	680
25N52E27BABA2	11-12-75	40	1,710	7.8	7.0	820	160	100	130	2	4	480
25N53E32DBCD2	11-12-75	346	2,450	8.4	10.5	16	2.8	2.2	600	66	2	1,140
25N53E33CABA	11-21-75	72	1,330	7.6	7.5	780	180	81	18	.3	4	500

Date of collection	Carbonate (CO_3)	Total alkalinity as $CaCO_3$	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Silica (SiO_2)	Dissolved solids, sum of constituents	Nitrate as N	Iron (Fe) (µg/L)	Lithium (Li) (µg/L)	Manganese (Mn) (µg/L)	Analysis by
8-18-75	0	750	3,200	44	.5	17	5,320	26	30	--	110	MBMG
8-20-75	0	920	980	9.8	.5	5.6	2,400	2.6	70	--	40	MBMG
11-19-75	0	630	1,200	7.4	<.1	12	2,240	1.1	1,600	70	110	MBMG
9-20-75	0	820	840	5.8	.1	11	2,040	2.8	10	--	30	MBMG
9-19-75	0	560	890	22	2.7	6.0	1,970	1.0	<10	--	<10	MBMG
9-18-75	0	1,000	1,400	7.2	.4	8.6	3,050	2.2	10	--	90	MBMG
9-24-75	0	600	1,400	5.2	.5	11	2,540	1.9	<10	--	150	MBMG
9-08-76	0	450	62	18	.3	7.9	559	<.02	3,500	30	80	MBMG
5-04-76	0	540	1,200	6.4	.1	16	2,130	--	830	60	460	USGS
9-01-76	0	470	280	14	.2	14	867	3.1	70	30	<10	MBMG
9-11-76	10	540	400	10	1.4	8.1	1,190	.15	30	30	10	MBMG
9-10-76	0	330	52	11.6	.2	13	424	4.0	30	30	10	MBMG
9-10-76	0	760	1,500	18	.3	6.8	2,920	<.02	380	120	60	MBMG
9-13-76	0	270	14	2.0	.3	14	293	.06	110	20	40	MBMG
9-13-76	0	470	200	2.6	.4	11	778	.41	2,400	60	40	MBMG
9-09-76	38	810	19	100	5.3	13	1,070	<.02	20	60	10	MBMG
9-15-76	0	1,520	.3	24	3.4	7.1	1,670	<.02	150	50	10	MBMG
9-15-76	0	1,140	2,000	18	1.2	7.8	4,270	.14	1,700	110	50	MBMG
8-07-75	0	370	520	7.0	.4	8.9	1,110	.25	10	--	10	MBMG
9-03-75	0	1,060	1,400	11	.6	8.8	3,280	3.5	20	--	30	MBMG
9-05-75	0	670	1,100	22	2.3	7.8	2,350	5.6	40	--	10	MBMG
8-13-75	0	500	400	4.0	.2	12	1,010	.59	50	--	890	MBMG
9-16-75	0	300	45	18	.2	10	390	2.6	<10	--	60	MBMG
9-19-75	0	420	490	5.0	.4	12	1,100	.56	<10	--	690	MBMG
9-17-75	61	390	350	110	.4	14	1,060	.09	200	--	<10	MBMG
11-21-75	0	370	640	6.4	.1	8.6	1,230	.20	5,600	40	150	MBMG
9-24-75	34	600	700	13	2.7	6.2	1,700	.68	10	--	<10	MBMG
10-03-75	88	850	3.9	85	4.5	12	1,060	--	60	--	10	USGS
10-10-75	0	510	2,600	5.8	.4	6.2	4,340	1.9	20	--	40	MBMG
9-30-75	0	380	240	12	.1	10	716	13	<10	--	<10	MBMG
10-08-75	0	580	1,600	4.8	<.1	9.2	2,850	.50	10	--	60	MBMG
9-14-76	0	560	530	5.0	.2	14	1,330	<.02	1,600	50	30	MBMG
9-13-76	0	860	3,500	12	<.1	12	5,700	.04	5,100	160	370	MBMG
9-11-76	0	340	220	8.5	0.1	13	651	0.04	4,400	40	210	MBMG
9-16-76	0	290	1,000	130	.2	7.5	1,800	2.6	460	90	170	MBMG
10-02-75	33	880	4.5	110	4.7	10	1,150	--	40	--	10	USGS
9-11-76	0	1,420	.2	24	4.1	7.0	1,560	.04	270	60	<10	MBMG
9-25-75	0	630	680	8.2	.2	8.9	1,640	2.8	<10	--	<10	MBMG
9-25-75	0	660	610	4.8	1.3	8.1	1,570	.90	10	--	40	MBMG
10-27-75	0	620	640	7.6	1.0	13	1,580	.25	<10	--	160	MBMG
10-21-75	24	910	540	8.3	1.9	5.3	1,750	1.1	60	--	<10	MBMG
11-21-75	0	1,160	1,100	12	1.3	6.6	2,930	1.6	60	100	20	MBMG
10-21-75	38	1,000	100	12	4.8	6.6	1,240	.70	<10	--	<10	MBMG
10-23-75	0	400	440	3.4	.2	11	1,000	.34	<10	--	<10	MBMG
10-16-75	14	880	860	1.5	1.3	6.5	2,190	1.1	250	--	<10	MBMG
10-17-75	0	320	30	2.3	.2	7.9	358	1.2	80	--	<10	MBMG
10-07-75	0	360	810	26	<.1	10	1,570	23	10	--	20	MBMG
10-13-75	0	330	380	3.0	.2	10	847	3.0	<10	--	<10	MBMG
10-24-75	0	560	1,000	15	.1	10	1,940	.25	10	--	1,200	MBMG
11-12-75	0	390	650	3.5	.1	13	1,300	3.9	10	--	10	MBMG
11-12-75	19	960	360	33	4.5	8.1	1,600	.79	30	--	<10	MBMG
11-21-75	0	410	390	7.2	.1	10	934	1.2	130	20	20	MBMG

Table 4.--Miscellaneous-constituent concentrations of water from selected wells
[Except as indicated otherwise, constituents are dissolved, constituent values are reported in micrograms per liter, and analyses are by U.S. Geological Survey. JTU, Jackson turbidity unit; mg/L, milligram per liter]

Sample location	Date of collection	Depth of well (feet)	Turbidity (JTU)	Noncarbonate hardness (mg/L)	Percent sodium	Bromide (Br) (mg/L)	Nitrogen, ammonia as N (mg/L)	Nitrogen, kjeldahl as N (mg/L)	Phosphorus (P) (mg/L)	Aluminum (Al)	Arsenic (As)	Barium (Ba)	Beryllium (Be)
13N61E18CCA	08-18-76	60	30	250	49	--	1.1	1.1	0.07	10	0	0	10
14N59E12CBD	12-10-75	916	--	0	99	--	--	--	.34	--	--	--	--
14N60E10DDD	07-28-76	47	10	270	4	--	--	--	.01	0	2	0	0
14N60E26BAA	08-17-76	114	10	190	30	--	.68	.53	.06	10	0	0	0
14N61E06CCA	07-29-76	155	90	0	53	--	--	--	.02	0	1	0	0
14N61E06CCA2	07-29-76	124	35	0	93	--	.76	.96	.04	20	2	0	0
18N43E10DABD	09-08-75	110	--	--	--	0.1a	--	--	--	--	--	<30a	--
18N44E13AAAB	05-05-76	278	480	0	97	.3a	.62	9.2	3.3	--	24	--	--
19N48E02CBDA	11-19-75	109	--	--	--	.3a	--	--	--	--	--	<30a	--
19N48E10DACA	10-03-75	1,518	--	0	99	--	--	--	.15	--	--	--	--
20N45E34DBCC	05-07-76	278	320	--	98	.2a	.53	1.1	.44	400	0	100	<6
20N47E36ADDD	05-06-76	220	380	0	98	.3a	.19	2.5	.54	--	1	--	--
20N49E18CCDC	05-06-76	120	9	0	90	.1a	.84	1.5	.05	--	0	--	--
20N49E27AADC	11-21-75	29	--	--	--	.0a	--	--	--	--	--	<30a	--
20N54E01DCDD	05-04-76	220	45	670	8	.0a	.86	1.7	.16	300	9	20	<2
20N58E34DDD	10-02-75	620	--	0	99	--	--	--	.42	--	--	--	--
21N45E20DCCD	11-19-75	89	--	--	--	.0a	--	--	--	--	--	<30a	--
21N46E19BCDA	11-19-75	105	--	--	--	.0a	--	--	--	--	--	<30a	--
21N53E08ADCC	05-04-76	70	160	1,100	8	.1a	.63	1.2	.30	80	0	20	<3
22N51E01ADDA	11-21-75	40	--	--	--	.0a	--	--	--	--	--	<30a	--
22N52E20DC	10-03-75	1,225	--	0	99	--	--	--	.26	--	--	--	--
22N58E12DCC	10-02-75	1,140	--	0	99	--	--	--	.24	--	--	--	--
23N52E18BDAC	11-21-75	88	--	--	--	.1a	--	--	--	--	--	<30a	--
25N53E33CABA	11-21-75	72	--	--	--	.0a	--	--	--	--	--	90a	--

Date of collection	Boron (B)	Cadmium (Cd)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Selenium (Se)	Strontium (Sr)	Vanadium (V)	Zinc (Zn)	Carbon, organic as C
08-18-76	1,200	0	0	0	0	2	0	0	0	0	6,500	0	0	23
12-10-75	750	--	--	--	--	--	--	--	--	--	--	--	--	--
07-28-76	290	0	0	0	0	0	0	0	0	0	1,300	0	0	12
08-17-76	500	2	0	0	4	8	0	0	2	0	2,800	0	40	21
07-29-76	360	0	0	0	3	4	1.5	4	2	0	2,000	.5	0	4.8
07-29-76	490	1	0	0	2	13	0	2	1	0	970	0	20	--
09-08-75	800a	--	--	--	--	<50a	--	<10a	--	<2a	3,900a	--	--	--
05-05-76	--	--	--	--	2	--	0	--	--	0	--	--	--	110
11-19-75	180a	--	--	--	--	<50a	--	<10a	--	--	600a	--	--	--
10-03-75	1,400	--	--	--	--	--	--	--	--	--	--	--	--	--
05-07-76	320	0	<30	<30	<6	<20	--	40	<27	0	200	<20	0	26
05-06-76	--	--	--	--	15	--	0	--	--	0	--	--	--	24
05-06-76	--	--	--	--	2	--	0	--	--	0	--	--	--	44
11-21-75	280a	--	--	--	--	<50a	--	<10a	--	<2a	2,400a	--	--	--
05-04-76	140	0	<10	<10	1	<10	0	5	<10	0	3,600	<10	10	7.1
10-02-75	1,200	--	--	--	--	--	--	--	--	--	--	--	--	--
11-19-75	590a	--	--	--	--	50a	--	<10a	--	--	1,800a	--	--	--
11-19-75	1,100a	--	--	--	--	80a	--	<10a	--	--	9,500a	--	--	--
05-04-76	240	0	<10	<10	1	<10	--	20	<10	--	6,900	<10	110	6.2
11-21-75	390a	--	--	--	--	50a	--	<10a	--	--	3,400a	--	--	--
10-03-75	1,200	--	--	--	--	--	--	--	--	--	--	--	--	--
10-02-75	1,400	--	--	--	--	--	--	--	--	--	--	--	--	--
11-21-75	260a	--	--	--	--	50a	--	10a	--	--	1,200a	--	--	--
11-21-75	120a	--	--	--	--	<50a	--	10a	--	--	1,400a	--	--	--

a, Analysis by Montana Bureau of Mines and Geology

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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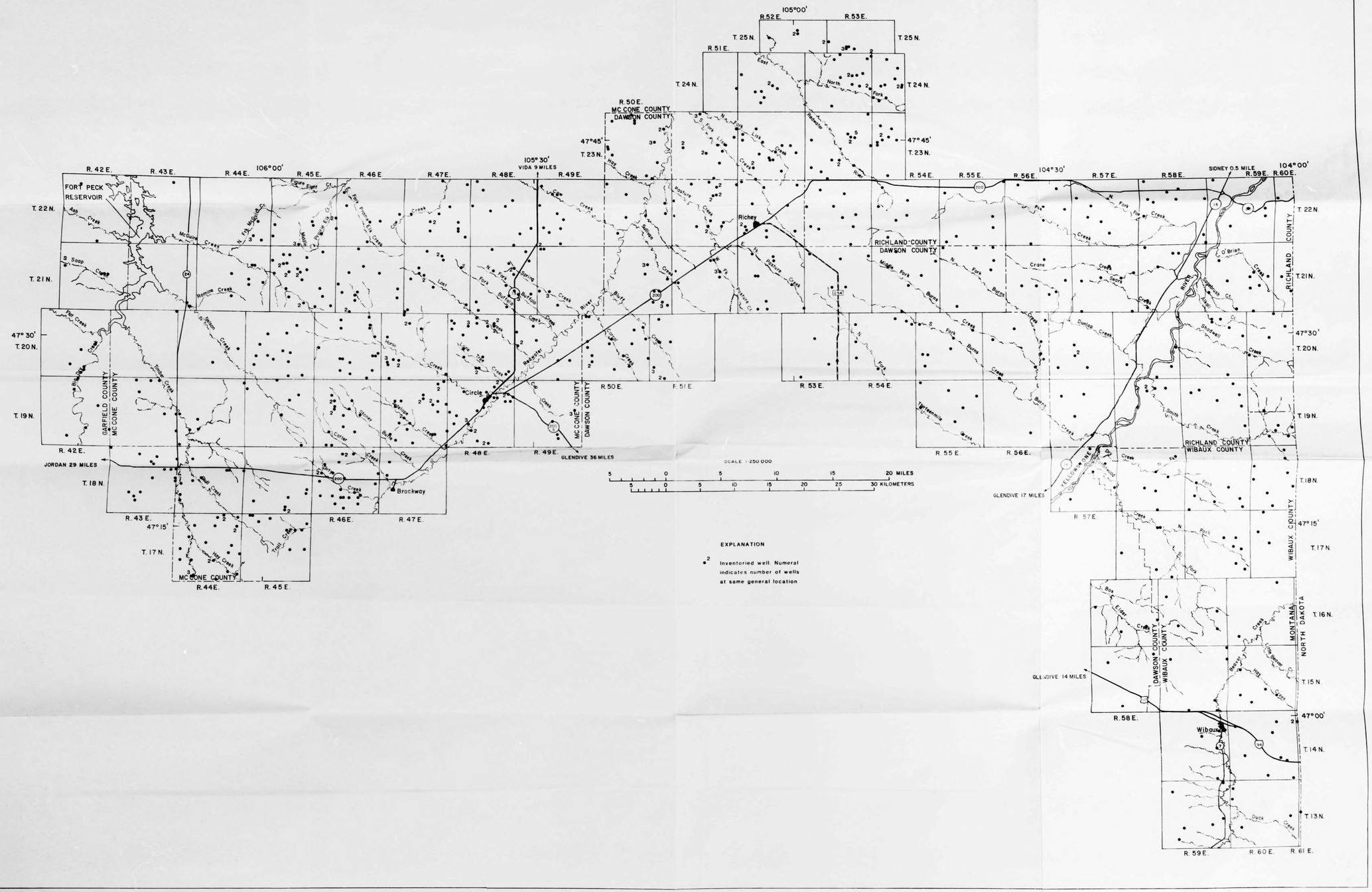
WATER-RESOURCES INVESTIGATIONS
OPEN-FILE REPORT 80-329
PLATE 1



EXPLANATION

•2 Inventoried well. Numeral indicates number of wells at same general location

Base from U.S. Geological Survey
1:250,000 quadrangles

MAP SHOWING LOCATIONS OF INVENTORIED WELLS IN SELECTED COAL AREAS, EAST-CENTRAL MONTANA